John Beresford.

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A

COMPENDIUM

OF THE

ANATOMY

OF THE

HUMAN BODY,

INTENDED PRINCIPALLY FOR THE USE
OF STUDENTS.

BY ANDREW FYFE.

IN THREE VOLUMES.

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Haec mea ornamenta sunt–

John Beresford 1805

CONTENTS

OF THE

THIRD VOLUME.

PART V.

OF THE ABSORBENT SYSTEM.

Pag.

Of the Absorbents in General, - - 3
Of the Particular Absorbents, - - 8

PART VI.

OF THE BLOOD-VESSELS.

Of the Blood-vessels in General, - 33
Distribution of the Blood-vessels, - 42
Of the Pulmonary Artery and Veins, - ib.
General Courſe of the Aorta and Vena Cava, 43
Blood-vessels *of the* Head *and Part of thoſe of the* Neck, - - - 45

The

Pag.

The remaining Blood-vessels *of the* Neck, *with thoſe of the* Superior Extremity *in General*, 73

Blood-vessels *within the* Thorax, - 88

———— *of the* Diaphragm, - 93

———— *of the* Chylopoietic, *and* Assistant Chylopoietic Viscera, - 94

———— *of the* Organs *of* Urine *and* Generation, - - 105

———— *of the Containing Parts of the* Abdomen, *and of the* Pelvis *and* Inferior Extremity, - - - 113

PART VII.

OF THE NERVES.

Of the Nerves in General, - 143

Distribution of the Nerves, - 149

Nerves which paſs through the Baſe of the Cranium, - - - - 150

Spinal Marrow, *and* Origin *of the* Spinal Nerves, - - - 174

Nerves *of the* Neck *and* Superior Extremity, - - - 181

———— *within the* Thorax, - - 196

———— *of the* Chylopoietic *and* Assistant Chylopoietic Viscera, - 205

Pag.

Nerves *of the* Organs *of* Urine *and* Generation, - - 209

——— *of the* Loins, Pelvis, *and* Inferior Extremity, - - 212

PART V.

OF THE

ABSORBENT SYSTEM.

OF THE

ABSORBENT SYSTEM.

Of the ABSORBENTS *in General.*

THE *Abſorbent Syſtem* conſiſts of the *Abſorbent Veſſels* and *Conglobate Glands*, the former of which are divided into *Lymphatic* and *Lacteal Veſſels.*

The *Abſorbents* are ſmall *Pellucid Tubes*, which have been diſcovered in moſt parts of the Body, and are ſuppoſed to exiſt in all.

They begin by numberleſs open *Mouths*, too minute to be viſible to the naked Eye. By the aſſiſtance of Glaſſes, however, the Orifices of the Lacteals have been ſeen in the Human Body by MR CRUIKSHANK;—*See Cruickſhank's Treatiſe on this Subject:* and thoſe of the Lymphatics in certain kinds of Fiſhes, by DR MONRO;—*See Monro's Treatiſe on this Subject.*

They

They ariſe from the External Surface of the Body, from the Cellular Subſtance, from the Surfaces of the large Cavities, and from the Surface and Subſtance of the different Viſcera; but have not yet been obſerved in the Cavity of the Cranium, or in the Placenta and its Membranes.

In the different parts of the Body in general, they run in two Sets, one Superficial and very numerous, the other accompanying the Arteries, and at leaſt double their number.

The Lacteals are of the ſame nature with the other Abſorbents. They begin from the inſide of the Inteſtines, and when theſe contain Alimentary matter, they carry a white Fluid, called *Chyle*, and at other times, a *Clear Fluid* or *Lymph*, to be mixed with the contents of the Lymphatics.

Moſt of the Lymphatics, and all the Lacteals, terminate in the Thoracic Duct, by which the Lymph and Chyle are conveyed to the Red Veins, to be mixed with the Blood.

The common place of Termination is in the large Veins in the bottom of the Neck;—no Facts or Obſervations having been yet eſtabliſhed of their terminating in any other part of the Venous Syſtem.

The *Coats* of the Abſorbents are thinner and more tranſparent, but ſtronger than thoſe of the Red Veins, being able to ſupport a Column of Mercury of conſiderable weight;—but from their thinneſs they cannot be enumerated.

The Abſorbents are generally ſuppoſed, however, to be formed of different *Membranous Layers*, like the Blood-veſſels.—Fibres can be ſeen in them, and their Muſcularity is rendered probable by the Contractile power which they are obſerved to poſſeſs in a living or moribund Animal.

By this Contractility they convey their Contents from their Origins towards their Terminations, in which they are aſſiſted by the motions of the ſurrounding parts, independent of ſuch a *Vis a tergo* as contributes to propel the Blood through the Veins.

They are furniſhed with *Blood-veſſels* for their nouriſhment, as is ſometimes obſerved by penetrating Injections; and this is rendered ſtill more evident by their being ſuſceptible of Inflammation and Pain.

The preſence of *Nerves* alſo appears probable from the acuteneſs of their feeling when in a ſtate of Inflammation.

In general, they form an irregular *Net-work*, having frequent Communications with each other; and theſe are moſt numerous in the vicinity of their Glands.

Through their whole extent, they are intercepted by *Valves*, which are placed in Pairs, and are of a Semicircular form, having one edge of each Valve fixed to the ſide of the Veſſel, and the other edge looſe acroſs its cavity, but turned towards the general Terminations.

The Valves are found, in ſome parts, to be ſituated at equal diſtances; in others, more irregularly.—Their number alſo is very uncertain, amounting in ſome parts to three or four, and in others to ſeven or eight, or upwards, in the length of an inch;—but varying ſtill more with reſpect to number in different Bodies, and in different parts of the ſame Body.

When the Abſorbents are diſtended, they appear largeſt on the ſide of the Valves towards their general Termination, and the Enlargements are ſuch as to give the Lymphatics a Jointed, and the Lacteals frequently a Veſicular appearance.

In the Termination of the Abſorbents, whether in the Thoracic Duct, or in the Red Veins, there is always one, and commonly two Valves, to prevent the Contents of the Duct or of the Veins from paſſing into them.

The *Uſe* of the Valves is,—to promote the general courſe of the Lymph and Chyle, and to prevent the retrograde motion of theſe Fluids within their Veſſels.

Uſe of the Abſorbents: The Lymphatics take in the Fluids applied to their Orifices by Capillary Attraction, and by a Power inherent in themſelves, and by their Contractile nature conduct them into the Maſs of Blood, whereby they prevent Morbid Accumulations.—The Lacteals, in like manner, receive the Chyle from the Inteſtines for the Nouriſhment of the Body.

The *Conglobate Glands*, or Glands of the Abſorbent Veſſels, are found in various parts of the Body, and are ſituated in the Cellular Subſtance under the Skin, or over the Trunks of the Blood-veſſels belonging to the different Viſcera:—They are of a round or oval Form, and frequently a little flattened.

They are of different Sizes, from that of a Millet-ſeed to that of a Subſtance near an inch in diameter; and ſometimes ſeveral are collected into one Maſs.

Their Colour alſo varies in different parts of the Body, and at different times of Life.

In Young Subjects, they are generally largeſt, and of a reddiſh or brown colour, but become ſmaller and paler with increaſing age; and immediately under the Skin, they are redder and firmer than within the large Cavities.

They have a ſmooth, denſe, *Membranous Covering*, which gives them a ſhining appearance, and are connected to the ſurrounding parts by looſe Cellular Subſtance.

Their Coat is connected to the Glandular part by a Cellular Membrane, which, according to DR HALLER, is pervaded by a *Succus Proprius* full of Globules, which, MR HEWSON ſuppoſed, afterwards form the Red Globules of the Blood.

Like other Glands, they have Arteries, Veins, and Nerves, entering their compoſition.

They are deſcribed by ſome Anatomiſts, as being compoſed of *Cells internally*, while others conſider them as being a *Congeries of convoluted Abſorbent Veſſels*.—Moſt of the Glands have much of the former, but many of them of the latter appearance.

The Abſorbents entering into the Glands, are called *Vaſa Inferentia.* When they approach, or come in contact with the Gland, they ſplit into radiated Branches, which, after ſpreading out upon it, penetrate into its Subſtance.

The greater part of the Abſorbents, approaching a Gland, terminate in it in this manner, while others turn

aſide,

aſide, or go over it, and terminate in other Abſorbents or in other Glands.

From the oppoſite ſide of the Glands, Veſſels go out in the manner they entered them, and are termed *Vaſa Efferentia.* They are frequently, though by no means always, fewer in number, but larger than the *Vaſa Inferentia.*

Moſt of the Abſorbents go through ſeveral Glands, but in ſome parts, through one only, before they reach their General Terminations.

The Lymph and Chyle are ſtrained through the Glands, by which they are ſuppoſed to undergo certain Changes, —but the Nature of theſe Changes has not yet been aſcertained.

PARTICULAR ABSORBENTS.

THE *Superficial Abſorbents of the Lower Extremities*, conſiſt of numerous Veſſels, which lie between the Skin and Muſcles.

They belong to the Integuments in general, and are much more numerous than the Subcutaneous Red Veins.

They can be traced from the Toes, round which they form a Plexus.

From the Toes, ſeveral Branches, likewiſe forming a Plexus, run over the top of the Foot, to the inner part of the Leg, and from that along the correſponding part of the Knee.

From the outer part of the Foot, another Plexus ariſes, which runs along the outſide of the Leg, where it ſplits into two Diviſions, one of which croſſes obliquely over the fore-part of the Tibia, to the Lymphatics at the inner ſide of the Knee.

The other Diviſion paſſes partly to the Popliteal Glands, ſome aſcending upon the outer and back part of the Thigh.

The *Popliteal Glands* are commonly two or three in number, and are ſituated near the Artery of the ſame name, but frequently they are ſo ſmall and ſo much buried in Fat, as to be diſcovered with difficulty.

From the Sole another Plexus of Lymphatics ariſes, and joins thoſe upon the Leg already deſcribed.

From the inſide of the Knee a Plexus runs up, conſiſting of from twelve to twenty Trunks, which paſs afterwards on the fore and inner part of the Thigh to the Groin.

The greater part of the Trunks of the laſt Plexus, accompany the Vein called *Saphena Major*, and in their paſſage, they receive many ſmall Branches from the outer and back part of the Thigh.

In the Groin, they ſplit into Branches, which penetrate the Inguinal Glands.

The *Inguinal Glands* are generally from ſix or eight to a dozen in number, and are of very different ſizes; but ſometimes the number is ſmaller, in conſequence of two or more of them being united into one large Gland.

Of the Inguinal Glands, ſome lie in the Angle between the Thigh and Abdomen, and others a few inches farther down on the fore-part of the Thigh.

The greater number are placed upon the outer part of the Tendinous Aponeuroſis, the reſt deeper, being in contact with the great Blood-veſſels.

The *Superficial Lymphatics of the Thigh* enter the loweſt of theſe Glands; one or more of them, however, frequently paſs the firſt Glands they meet with, and penetrate others higher in the Groin, and ſometimes a few do not enter any Glands till they go into the Abdomen.

Into the Inguinal Glands enter likewiſe the ſuperficial Lymphatics of the upper and back part of the Thigh, with thoſe of the Nates, Abdomen, and Loins.

The *Deep-ſeated Lymphatics of the Lower Extremity* are ſituated among the Muſcles.—They accompany the Blood-veſſels, and are few in number when compared with the Subcutaneous Set.

In ſeveral places, one only has been yet obſerved on each ſide of the Trunks of the Arteries, though, in others, they are ſomewhat more numerous, forming a Plexus over the Blood-veſſels.

They ariſe from the ſides of the Toes, and from the deep parts of the Sole, accompanying the Plantar Arteries; and, after reaching the Leg, they run up with the Poſterior Tibial Artery to the Ham.

In the Ham, they lie cloſe upon the Trunk of the Artery, and enter the Popliteal Glands.

Beſides theſe, there are ſimilar but ſmaller Lymphatics, which begin upon the upper part of the Foot, and afterwards accompany the Anterior Tibial, and the Fibular Arteries, receiving Branches from the deep parts of the fore and outer ſide of the Leg.

The *Anterior Tibial* and the *Fibular Lymphatics*, terminate with the Poſterior Tibial in the Glands of the Ham.

From the Popliteal Glands, two and ſometimes more Trunks of conſiderable ſize are ſent out, which accompany the Femoral Artery, and, at different diſtances, communicate with each other, by Branches which paſs obliquely acroſs the Artery.

At the upper part of the Thigh, they enter the undermoſt of the Inguinal Glands, where the Lymph of the Superficial and Deep-ſeated Abſorbents of the Limb is mixed and incorporated.

The *Superficial Lymphatics of the Scrotum* enter the upper and inner Inguinal Glands, thoſe deeper ſeated paſſing with the Lymphatics of the Teſticle into the Abdomen.

The *Superficial Lymphatics of the Penis* begin at the Prepuce, and form a few Trunks which run principally upon the Dorſum Penis, receiving in their paſſage Branches which turn round from its inferior Surface.

In ſome Subjects, they unite into Trunks in the middle of the Dorſum Penis, which afterwards ſeparate into right and left parts.

In others, they are more unconnected; and in all, they appear to divide at the root of the Penis into right and left Branches, paſſing into the correſponding Inguinal Glands, which lie next the Symphyſis of the Pubis.

The *Deep-ſeated Lymphatics of the Penis* ariſe from the Glans, and from the Body of the Penis, and accompany the Arteries into the under part of the Pelvis.

The *Lymphatics of the Teſticle* are numerous, and are among the largeſt of the whole Body, ſome of them exceeding the ſize of a Crow-quill.

They ariſe from the Coats and Subſtance of the Teſticle, and from the Epididymis, and run with the Spermatic Cord through the Ring of the Abdominal Muſcle, to terminate in the Lumbar Glands.—In their paſſage, they have few Communications with each other.

The *Lymphatics of the External Parts of Generation in Women*, go partly to the Inguinal Glands of each ſide, and partly through the Rings of the External Oblique Muſcles, in company with the Round Ligaments of the Uterus, and terminate in the Iliac or in the Lumbar Glands.

The *Superficial Lymphatics of the under part of the Abdomen*, thoſe of the *Loins*, *Nates*, and *Verge of the Anus*, paſs into the Inguinal Glands, each ſet terminating in ſuch of the Glands as lie neareſt the parts to which the Veſſels belong.

The Inguinal Glands, having received the Lymphatics of the Inferior Extremity, and likewiſe the Superficial Lymphatics of the External Parts of Generation, ſend out Trunks fewer in number, but conſiderably larger than thoſe which enter the Glands.

Theſe Vaſa Efferentia of theſe Inguinal Glands enter the Abdomen under POUPART's Ligament, in company with the Inguinal and Iliac Artery.

Some of them go into the Glands ſituated about the Iliac or the Lumbar Blood-veſſels. The *Iliac Glands* are frequently almoſt as numerous as the Glands of the Groin, and one of them is generally found larger than the reſt, and placed at the inner edge of Poupart's Ligament. The *Lumbar Glands* are more numerous than any of the Claſſes already deſcribed, and are placed over the Abdominal Aorta, Inferior Cava, and Bodies of the Lumbar Vertebræ.

The reſt of the Lymphatics from the Lower Extremity deſcend at the ſide of the Pelvis, near the Internal Iliac Blood-veſſels, and paſs through ſome of the Glands which are ſituated there.

The laſt-mentioned Lymphatics are joined by Abſorbents from the Viſcera of the Pelvis in general, eſpecially by thoſe of the Bladder and Veſiculæ Seminales in the Male, and by a portion of thoſe of the Uterus and of the Vagina in the Female.

The *Lymphatics of the Bladder*, in both Sexes, accompany its principal Blood-veſſels, paſs through ſome ſmall Glands upon the ſide of it, and, at the under part of the Pelvis, go into the Glands which ſurround the Internal Iliac Artery and Vein.

The *Lymphatics of the Uterus* run in two Sets. One, which is the largeſt, goes with the Hypogaſtric, the other with the Spermatic Blood-veſſels.

The *Hypogaſtric Lymphatics* form a Plexus which runs from above downwards, into Glands ſituated on the ſides of the Vagina.

From theſe Glands they paſs to others which ſurround the Internal Iliac Veſſels, and then, intermixing with the Trunks from the Extremities, they terminate in the Thoracic Duct.

The Lymphatics of the Uterus, like its Blood-veſſels, are much enlarged, and of conſequence eaſily diſcovered, in the Gravid ſtate.

The *Lymphatics of the Rectum* go firſt into ſmall Glands which lie between it and the Os Sacrum, and afterwards terminate in the Lumbar Plexus of Glands and Veſſels.

Beſides the Lymphatics which lie on the inſide of the External Iliac Artery, there are others ſituated on the outſide of it, upon the Pſoas Muſcle.

Of theſe, one part paſſes up to the Lumbar Plexus, and goes under the Aorta, in different Branches which terminate in the Thoracic Duct.

Another part paſſes under the Iliac Arteries, and appears upon the Os Sacrum, forming a remarkable Plexus, which goes through many Glands, and is chiefly ſituated behind the Aorta and Vena Cava.

The *Lacteal Veſſels*, ſo called from conveying a Fluid like Milk, which is termed *Chyle*, begin upon the inner Surface of the Inteſtines. Each Lacteal takes its Origin upon one of the Villi, by numerous ſhort radiated Branches, and each Branch is furniſhed with an Orifice for imbibing the Chyle.

From the Villi, the Lacteals run a conſiderable way under the Muſcular Coat of the Inteſtines, and then paſs obliquely through them, uniting in their courſe into larger Branches.

They follow the direction of the Blood-veſſels, and their Trunks are double the number of the Arteries,—one being ſituated on each ſide of them.

Upon the outſide of the Inteſtines an External Set appear. They run between the Peritonœal and Muſcular

Coats, and commonly proceed ſome way in the direction of the Inteſtine, and with few Ramifications.

The Superficial and Deep-ſeated Lacteals communicate in the Subſtance of the Inteſtines, and, after leaving them, commonly form a Plexus, which runs between the Plies of the Meſentery and Meſo-colon, without following the courſe of the Blood-veſſels.

The *Lacteals of the Jejunum* are larger and more numerous than thoſe of the *Ilium*, the principal part of the Chyle being contained in this Inteſtine.

In their courſe, they paſs through a great number of Lacteal or Meſenteric Glands, which, like the Lacteals themſelves, are largeſt and moſt numerous in that part of the Meſentery which belongs to the Jejunum.

The *Meſenteric Glands* are ſeated in the Fat between the Layers of the Meſentery, near the Branches of the Blood-veſſels.

They are commonly ſcattered over the Meſentery, at a little diſtance from each other; but there are ſeldom any obſerved within two or three inches of the Inteſtines.

They are of different ſizes in different parts of the Meſentery, ſome being about a half or two thirds of an inch in diameter, while others are ſo ſmall as to be traced with difficulty.

Their Structure is the ſame with that of the Abſorbent Glands in other parts of the Body, but they are generally flatter, and are of a white colour when filled with the Chyle.

They are conſidered by ſome Authors as dividing the Lacteals into different Orders.

From the Inteſtines to the Glands, the Lacteals are called *Vaſa Lactea Primi Generis*, and from the Glands to the Thoracic Duct, *Vaſa Lactea Secundi Generis*.

Some divide them into Three Orders;—the firſt conſiſting of thoſe which go from the Inteſtines to the Glands, —the ſecond, of thoſe which run from one Set of Glands to another,—and the third, of thoſe which paſs from the Glands to the Thoracic Duct.

The *Lacteals of the Small Inteſtines*, after paſſing through the different Glands in the Meſentery, form at laſt one, and frequently two, three, or more Trunks, which accompany the Trunks of the Superior Meſenteric Artery, till they arrive at the right ſide of the Aorta, where they ſometimes paſs into the beginning of the Thoracic Duct. —At other times they deſcend a little, and join the Trunks from the Inferior Extremities, to form that Duct.

The Abſorbents of the *Great* are of an inferior ſize in proportion to thoſe of the *Small Inteſtines*, and have ſeldom, though ſometimes, been obſerved to be filled with Chyle.

In their courſe, they go through the Meſo-colic Glands, which are ſituated between the Layers of the Meſo-colon, but are generally much leſs numerous and conſiderably ſmaller than thoſe of the Meſentery, or of moſt other parts of the Body.

The Abſorbents of the *Cœcum*, and of the *Right Portion of the Colon*, join thoſe of the ſmall Inteſtines, about the root of the Meſentery.

Thoſe of the *Left Portion of the Colon* accompany the Inferior Meſenteric Artery, and communicate with large Lymphatics near its root.

They terminate at laſt in the Lumbar Glands, or go directly into the lower part of the Thoracic Duct.

Of the Abſorbents of the *Stomach*, one Set runs upon its Small, and another upon its Great Curvature, but neither the one nor the other are found to carry Chyle, though a few Abſorbents have been obſerved filled with it in other Animals,—as the Dog.

The firſt Set, compoſed of Branches from the upper and under Surfaces of the Stomach, accompany the Superior Coronary Artery.

In their paſſage, they go through a few ſmall Glands ſituated at the junction of the Omentum Minus to the Stomach, and, after becoming larger, they enter other Glands in company with the Deep-ſeated Lymphatics of the Liver, along with which they terminate in the Thoracic Duct

The other Set paſſes from the Great Curvature of the Stomach, partly to the right, and partly to the left ſide, and, as on the Small Curvature, are formed of Branches from its oppoſite Surfaces.

Thoſe on the left ſide receive the Lymphatics of the middle and correſponding half of the Omentum Majus. Running to the left ſide of the Large Curvature of the Stomach, and paſſing through one or two ſmall Glands on it, they go with the Lymphatics of the Spleen and Pancreas to the Thoracic Duct.

Thoſe of the right ſide receive the Lymphatics of the correſponding half of the Great Omentum, and alſo paſs through one or two ſmall Glands which lie cloſe to the Right Gaſtric Artery.

In their deſcent by the Pylorus, they meet the Plexus which accompany the Superior Coronary Artery, and run with them, and with the Deep Lymphatics of the Liver, to the Thoracic Duct.

The *Lymphatics of the Liver*, like thoſe of other Viſcera, run in two Sets, the Superficial of which are numerous, and unite into Trunks in the manner Roots unite to form the Trunk of a Tree.

The Superficial and Deep Sets communicate ſo freely, that upon injecting the Lymphatics of the External Surface, the Deep-ſeated Abſorbents are readily filled from them.

The principal part of the Lymphatics upon the Convex Surface of the Liver, go by a Right and Left Plexus towards the Suſpenſory Ligament.

Running along this Ligament, they directly perforate the Diaphragm, after which they paſs through Glands ſituated upon the anterior part of the Pericardium.

Other Lymphatics from the Convex part of the Liver run towards the Lateral Ligaments, where they form on each ſide, one or more Trunks of conſiderable ſize.

From the Lateral Ligaments they paſs through the Subſtance of the Diaphragm, and afterwards run forwards on its Convex ſurface, following the Direction of the Ribs.—Not unfrequently, theſe Veſſels, inſtead of perforating the Diaphragm, run downwards, and terminate in the Thoracic Duct, within the Abdomen.

In their courſe upon the Diaphragm, they often ſend Branches backwards, which terminate in Glands upon the

Œſophagus.—In other inſtances, theſe Branches are obſerved to go directly into the Thoracic Duct.

They receive Branches from the Subſtance of the Diaphragm, and, after perforating two or three Glands upon its Surface, they join the Trunks from the Ligamentum Suſpenſorium.

The Lymphatics from the Lateral Ligaments, joined by thoſe from the Ligamentum Suſpenſorium, form either a Principal Trunk, or a Plexus, which runs up, ſometimes between the Layers of the Anterior Mediaſtinum, and, at other times, in company with the Internal Mammary Blood-veſſels on each ſide.

When they run in the Anterior Mediaſtinum, they moſt frequently terminate in the upper end of the Thoracic Duct; — ſometimes, however, they communicate with the General Termination in the Right ſide of the Neck.

When they accompany the Internal Mammary Veſſels, they are obſerved to terminate, the left in the Thoracic Duct, and the right in the General Termination of that ſide.

The Lymphatics on the Concave Surface of the Liver run towards the Porta, and join the Deep-ſeated Set.—One part of them goes over the under Surface of the Gall-bladder, from which they receive numerous ſmall Branches.

The Deep-ſeated Lymphatics accompany the Blood and Biliary Veſſels, and, communicating with the Superficial Abſorbents already mentioned, they paſs through ſeveral Glands ſituated about the Trunk of the Vena Portæ, and terminate in the Thoracic Duct, near the Root of the Superior Meſenteric Artery.

The Superficial Lymphatics of the *Spleen* are remarkably ſmall. They paſs from its Convex to its Concave Surface, where they join the Deep-ſeated Lymphatics, which are very conſiderable in ſize and number.

The *Splenic Plexus* of Lymphatics accompany the Splenic Artery, and go through ſeveral Glands of a dark colour, ſcattered along the Surface of that Veſſel.

The Lymphatics of the Spleen receive thoſe of the Pancreas, which run into them in a tranſverſe direction.

In their courſe, they unite with the Lymphatics of the Stomach and thoſe deſcending from the under part of the Liver; and the whole of them, near the Head of the Pancreas, form a conſiderable Plexus. From this Plexus, Branches are ſent off, ſome paſſing over the Duodenum, and others under it, and all of them going into the Thoracic Duct near the Termination of the Lacteals.

The *Lymphatics of the Kidney* are ſeldom ſeen, excepting when it is enlarged or ulcerated, in which caſe they may ſometimes be diſtinctly obſerved.

The Superficial Abſorbents run from its outer towards its inner edge, where, meeting with thoſe deep ſeated, they commonly unite with them, and form a Plexus which accompanies the Renal Blood-veſſels, after which they paſs through ſome of the Lumbar Glands, and terminate in large Lymphatics near the Aorta.

The *Lymphatics of the Capſula Renalis*, which are numerous in proportion to its ſize, terminate in the Renal Plexus.

All the Abſorbents already deſcribed, excepting thoſe from the Convex Surface of the Liver, terminate in the Thoracic Duct near its beginning.

The *Thoracic Duct*, at its under extremity, is formed by the union of three, or ſometimes of more principal Trunks, the firſt of which is compoſed of the Lymphatics of the right, and the ſecond of thoſe of the left Inferior Extremity:—the third Trunk, or ſet of Trunks, belongs chiefly to the Lacteals.

Theſe large Abſorbents unite ſo as to form the Duct over the third Vertebra of the Loins.

Sometimes they unite upon the ſecond Vertebra of the Loins, where the Duct formed by them is twice or thrice as large in diameter as it is higher up.

Commonly it enlarges again upon the firſt Vertebra of the Loins, where it has generally been called the *Receptacle of the Chyle*, and conſidered as the Beginning of the Duct, being often found forming an Oval, or Pyriform Bag, about the third of an inch in diameter.

Theſe large Trunks which form the Thoracic Duct lie cloſe upon the Spine, thoſe of the Right ſide being placed below the Right Crus of the Diaphragm, and thoſe of the left between the Aorta and Spine, while the Thoracic Duct itſelf lies at firſt behind the Aorta, but afterwards paſſes from it upwards, and a little to the right ſide, till it gets before the firſt Vertebra of the Loins.

Here it is ſituated behind the Right Crus of the Diaphragm, a little higher than the Right Renal Artery, from whence it paſſes upwards, and afterwards appears in the Thorax, upon the fore and right ſide of the Spine, between the Aorta and Vena Azygos, where it is ſuppoſed to be conſiderably aſſiſted by the ſtrokes of the Aorta in impelling its Fluids.

In the middle of the Thorax, it is ſmaller than elſewhere, being only about a line in diameter. After this it gradually enlarges, and, near its Termination, is about an eighth or tenth of an inch over.

In the Thorax, it receives the Lymphatics of the Spatia Intercoſtalia, one or two of which accompanies each of the Intercoſtal Arteries, and the whole go through ſmall Glands placed near theſe Arteries, but moſt numerous about the ſides of the Dorſal Vertebræ, where they form a ſort of Chain.

Here, likewiſe, it receives Branches from the Œſophagus and Lungs, the former of which is ſurrounded with a number of Glands, and with a remarkable and intricate Plexus of Lymphatic Veſſels.

The *Superficial Lymphatics of the Lungs* form large Areolæ, which have ſmaller Areolæ within them, the larger running chiefly between the Lobules, and the ſmaller paſſing over them in ſuch a manner as to cover almoſt the whole Surface of the Lungs.

From the Surface they go to the root of the Lungs, where they paſs through the Bronchial Glands, which have already been taken notice of in the deſcription of the Lungs.

At this place they are joined by the Deep-ſeated Lymphatics which creep along the Branches of the Trachea and of the Pulmonary Blood-veſſels.

Through the medium of the Bronchial Glands, the Lymphatics of the two ſides of the Lungs communicate freely with each other.

Having left the Glands, the principal part of thoſe from the left Lung form a Trunk of conſiderable ſize, which terminates in the Thoracic Duct, behind the Bifurcation of the Trachea.

The reſt of the Abſorbents of the left Lung paſs through Glands behind the Arch of the Aorta, which are likewiſe common to thoſe of the Heart. They run at laſt by a Principal Trunk into the Thoracic Duct near its Termination.

After leaving the Bronchial Glands, the Abſorbents of the Right Lung form a few principal Trunks, one of which commonly aſcends on the fore-part of the Vena Cava Superior, and, running in a convoluted manner, opens into the Trunk which terminates in the Veins in the right ſide of the Neck.

The reſt of theſe Trunks go into the Thoracic Duct, near the Bifurcation of the Trachea.

The *Abſorbents of the Heart* are ſmall, but numerous, and form principal Trunks which accompany the Coronary Arteries, and, like them, the largeſt belong to the Left Ventricle.

From the ſide of the Right Coronary Artery, an Abſorbent Trunk which correſponds with it, paſſes over the Arch of the Aorta to a Gland commonly found behind the Origin of the Carotid Arteries.

From this Gland it goes afterwards to the General Termination in the right ſide of the Neck.

The Lymphatic Trunk accompanying the Left Coronary Artery is formed of two principal Branches, one of which runs in the Groove between the Ventricles on the ſuperior Surface of the Heart. The other runs in a ſimilar Groove on the under ſide of the Heart, and having reached the ſpace between the Auricles and Ventricles, turns round to join the former Branch near its correſponding Artery.

The Trunk runs next to a Gland placed behind the Pulmonary Artery, between the Arch of the Aorta and Root of the Trachea, which, with the others here ſituated, is common to the Abſorbents of the Heart and Lungs.

This Trunk terminates at length in the upper end of the Thoracic Duct.

The Thoracic Duct, after receiving numerous Lymphatics within the Thorax, and having reached as high as the third or fourth Dorſal Vertebra, paſſes obliquely over to the left ſide of the Spine, behind the Œſophagus and end of the Arch of the Aorta, or beginning of the Aorta Deſcendens, till it reaches the Left Carotid Artery.

After this, it emerges from the Thorax, and runs between the Longus Colli Muſcle and Internal Jugular Vein, to about the ſixth Vertebra of the Neck.

It now makes a turn downwards, and, after deſcending near an inch, terminates in the upper and back part of the Angle formed by the left Internal Jugular and Subclavian Vein.

Throughout its whole courſe, it has a waving appearance, and this becomes more conſpicuous in proportion as it is diſtended by Injection. Near the middle of the Thorax, it not unfrequently ſplits into two or more Branches, and ſometimes forms a Plexus, the Branches of which again unite into a Common Trunk a little higher up.

After emerging from the Thorax, it commonly divides into two parts, which unite again previous to the Termination of the Duct in the Red Veins; and where there is no Diviſion, there is generally a Dilatation or Sac at the Termination.

Sometimes there is one Termination in the Angle formed by the Red Veins, and one or two in the Subclavian Vein, and now and then, though more ſeldom, in the Internal Jugular, near the Angle.

In a few Inſtances, it has been found Double through its whole length, one Duct going to the Common place of Termination in the Left ſide of the Neck, and the other in the correſponding part in the Right.

It has alſo, in a few rare Inſtances, been obſerved to terminate in the Veins in the Right ſide of the Neck, while a Short Trunk, ſimilar to that commonly found there, has terminated in the Left ſide.

The *Superior*, in a ſimilar manner with the Inferior Extremities, have Two Sets of Lymphatics, one lying immediately under the Integuments, and belonging to the Skin and Cellular Subſtance under it, the other accompanying the principal Blood-veſſels, and belonging to the Parts deep ſeated.

The Superficial Lymphatics of the Superior Extremities are numerous, and are readily ſeen in emaciated Subjects.

They ariſe from the fore and back parts of the Fingers and Hand, by a conſiderable number of Branches, and form an extenſive Plexus upon the correſponding ſides of the Fore-arm.

Thoſe upon the anterior part of the Fore-arm run directly upwards to the Arm, while the Lymphatics on its back-part ſeparate into two Sets, one of which paſſes obliquely over the Muſcles on the Radius, and the other over thoſe on the Ulna, to join the Lymphatics on the anterior part of the Fore-arm.

The Lymphatics of the Fore-arm run over the bending of the Elbow, and afterwards aſcend upon the fore and inner part of the Arm, the greater number of them running near the Baſilic Vein.

Some of them frequently paſs through ſmall Glands placed along the Humeral Artery, one of which is commonly found a little above the inner Condyle of the Os Humeri; others do not appear to enter any Glands till they reach thoſe of the Axilla.

A few Lymphatics accompany the Cephalic Vein, and receive Branches from the outer part of the Arm, and, after paſſing between the Pectoral and Deltoid Muſcles, penetrate Glands at the under ſide of the Clavicle.

Of the Deep-ſeated Lymphatics, two commonly accompany each principal Artery in the Fore-arm, and theſe, uniting at the Elbow, form two principal Lymphatics,

phatics, which accompany the Trunk of the Humeral Artery.

Having reached the upper part of the Arm, they enter the Axillary Glands, where they are joined by Lymphatics which come from the Mamma and lateral parts of the Thorax, after paſſing through ſmall Glands placed upon the under edge of the Mamma and of the large Pectoral Muſcle.

The *Axillary Glands* vary in number and ſize in different Perſons. They are ſomewhat ſmaller, and fewer in number, than thoſe of the Groin. They are generally ſurrounded by a conſiderable quantity of Fat, and are ſituated in the Hollow between the large Pectoral and Latiſſimus Dorſi Muſcles, adhering cloſely to the Trunks of the Axillary Blood-veſſels and Nerves.

From the Axillary Glands large Branches go under the Clavicle, and form a Trunk, which, in the Left ſide, commonly joins the Thoracic Duct near its Termination. In the Right ſide, it joins the Short Trunk which forms the Second General Termination of the Abſorbent Syſtem. Sometimes this Trunk, proceeding from the Superior Extremity, terminates in the Subclavian Vein, at a little diſtance from the General Termination.

The Axillary Glands receive alſo the Subcutaneous Lymphatics from the back-part of the Thorax, together with the Lymphatics from the Integuments and Muſcles of the Scapula.

The Lymphatics on the *Outſide of the Head* accompany the Blood-veſſels, and paſs through Glands in their way to the Neck.

Thoſe paſſing down with the Temporal Artery go through ſmall Glands connected with the Parotid Gland, and alſo through others ſituated immediately under the Root of the Zygoma.

The Lymphatics which accompany the Occipital Blood-veſſels penetrate one or two minute Glands placed a little behind the root of the Ear, and over the Maſtoid Proceſs of the Temporal Bone.

The Lymphatics proceeding from the different parts of the *Face* accompany the Branches and Trunk of the Facial Artery.

Some of them paſs through Glands ſituated upon the outſide of the Buccinator Muſcle, while the principal Trunks go through a number of large Glands placed upon the outer, and alſo at the under part of the Lower Jaw, at the anterior edge of the Maſſeter Muſcle, and about the Inferior Maxillary Gland.

The Lymphatics from the *inner part of the Noſe* run principally with the Internal Maxilly Artillery, and paſs through Glands ſituated behind the Angle of the Lower Jaw, where they are joined by thoſe which belong to the inner parts of the Mouth.

The Lymphatics of the *Tongue*, and likewiſe of the *Muſcles* and other parts about the Os Hyoides, enter the Glands placed behind the Angle of the Lower Jaw.

Lymphatics have been frequently ſearched for in the *Brain*, but their Exiſtence in that Organ is not yet fully aſcertained, though rendered highly probable,—from an appearance of Lymphatics having been now and then obſerved upon the Surface of the Dura Mater, and between the Tunica Arachnoides and Pia Mater,—from Lymphatics and Glands being occaſionally found in, or immediately on the outſide of the Paſſages of the Blood-veſſels of the Brain,—from Swellings in the Lymphatic Glands of the Neck, following Diſeaſes of the Brain,—from the Abſorption of Water, which has ſometimes happened in Hydrocephalous caſes, and—from their having been found on the Brains of Fiſhes.

From the Superficial and Deep parts of the Head in general, the Lymphatics accompany the External and Internal Jugular Veins and the Carotid Arteries, receiving at the ſame time Branches from the Muſcles and other parts of the Neck.

The principal part of theſe Lymphatics go along with the Internal Jugular Vein and Carotid Artery, and, in their paſſage, form a remarkable Plexus, which goes through the numerous Glands ſeated near the Blood-veſſels, compoſing a Chain, from which they are termed *Concatenatæ.*

The *Glandulæ Concatenatæ* are more numerous than any other Set of Glands in the Body, excepting thoſe which belong to the Meſentery.

The *Cervical Plexus* of Lymphatics having paſſed through the Glandulæ Concatenatæ, unite at the bottom of the Neck into a Trunk, which, in the Left ſide, enters the Thoracic Duct near its Termination, and, in the Right, goes into the Trunk, which forms the General Termination of that ſide.

The Trunk which forms this General Termination is only from a quarter of an inch to half an inch in length, but its ſize not much leſs than that of the Thoracic Duct.

It is formed by Lymphatics from the right ſide of the Liver, Diaphragm, Heart, and the right Lobe of the Lungs, by thoſe of the right Arm, right ſide of the Head, Neck, and Thyroid Gland; the Lymphatics of the left ſide of the Thyroid Gland forming a Trunk which ends in the Thoracic Duct.

Beſides this Common Termination, ſome of theſe Lymphatics occaſionally open into the Internal Jugular, or into the Subclavian Vein, at a little diſtance from the Angle formed by theſe two Veins.

PART VI.

OF THE

BLOOD-VESSELS.

OF THE

BLOOD-VESSELS IN GENERAL.

THE BLOOD-VESSELS are divided into ARTERIES and VEINS.

ARTERIES.

The *Arteries* are Elaſtic Canals, which convey the Blood from the Heart to the different parts of the Body, and are diſtinguiſhed from the Veins by their *Pulſation.*

They have obtained their Name from the Ancients, who ſuppoſed that they carried the finer parts of the Blood mixed with *Air,*—forming what they conſidered the *Animal Spirits.*

The Original Trunks of the Arteries,—or thoſe which ariſe from the Heart, are Two in number, viz. the *Pulmonary Artery* and *Aorta,*—all the other Arteries being derived from theſe.

The Arteries are diſperſed over the whole Body, and are every where ſurrounded with Cellular Subſtance.

The Principal Trunks run in the *Centre* or deepeſt parts of the Body and Extremities, where they are leaſt expoſed to danger,—deriving ſupport or defence from the Bones along which they paſs.

The largeſt Arteries go to the *Viſcera*, within the Great Cavities, the ſmaller ones to the *Skin* and *Muſcles*, and thoſe ſtill ſmaller to the *Bones*,—and, in certain places, they become ſo extremely minute as altogether to exclude the Red Blood, carrying a Colourleſs Fluid only.

The Arteries are diſtinguiſhed, in the Subject, from the Veins, by the *whiteneſs* of their Colour and *thickneſs* of their Coats.

They are compoſed of different *Layers* or *Coats*, which are readily ſeparated by Diſſection.

In ſeveral parts of the Body, as in the *Poſterior Mediaſtinum*, they are ſurrounded by a *Membrane*, common to them and to the neighbouring Viſcera.

In other parts of the Body, eſpecially in Young Subjects, they are ſurrounded with ſo much Cellular Subſtance, as to give them the appearance of being incloſed in *Sheaths*.

The firſt of the proper Coats is the *External Membranous*, or *Cellular*, called alſo by ſome Authors the *Nervous Coat*.

In the Large Arteries, this Coat is frequently furniſhed with *Fat*, and is of a very *elaſtic* nature. Owing to this Elaſticity, the Arteries, in receiving the Blood from the Heart, become dilated and elongated, and ſtart from their place, in conſequence of which they form the *Pulſe*, called alſo the *Diaſtole* of the Arteries.

The *Second*, or *Middle Coat*, is compoſed of Fibres running in a Tranſverſe direction,—of a pale red colour,—each Fibre appearing to form only the Segment of a

Circle, although the whole conſtitute a Cylinder round the Artery.

By the Contractility of this, and the Elaſtic nature of the former Coat, the Arteries are enabled to drive the Blood to the Veins, in proportion as they receive it from the Heart;—and this Contraction is called the *Syſtole* of the Arteries.

The *Third*, or *Inner Coat*, is formed of a tranſparent Membrane, remarkably thin, ſmooth, and denſe, by which the Blood is prevented from tranſuding.

The different Coats of the Arteries are connected to each other by fine Cellular Subſtance, which ſome Authors have conſidered as forming ſo many Lamellæ.

The Arteries are ſupplied with their own Blood-veſſels, termed *Vaſa Vaſorum*, which come from the neareſt ſmall Branches, and are every where diſperſed upon their external Surface.

They have alſo their *Lymphatics*, which, on the Large Arteries, as the Aorta, are ſo numerous as ſometimes to cover them.

They are likewiſe furniſhed with *ſmall Nerves*, forming, in ſome parts of the Body, a Plexus, which vaniſhes in their external Coat.

There are no *Valves* belonging to the Arteries, excepting thoſe which are placed at the Mouths of the Pulmonary Artery and Aorta.

Where the Arteries run a certain way without ſending off Branches, they are obſerved to be of a *Cylindrical* form; but where Branches come off, their Capacity is

diminiſhed,

diminiſhed, and this in proportion to the number of their Ramifications.

Wherever an Artery divides into two Branches, the Areæ of theſe two Branches, taken conjunctly, are found to be nearly one half larger than the Area of the Trunk from which they iſſue.

When the Trunk and Branches of an Artery are regarded collectively, they appear evidently of a *Conical* figure, the Point of the Cone being formed by the Trunk, and the Baſis by the Branches of the Artery.

The Section of the Arteries is Circular;—when empty, they become Flat, but recover their round form upon being diſtended by Injection.

The Angles at which the Branches go off from their Trunks are in general more obtuſe or acute, in proportion to their vicinity to the Heart, and are ſuch as are moſt favourable to the Parts they have to ſupply.

In the Trunk of the Body, or where they belong to tender and delicate Viſcera, the Angles are more obtuſe; —in the Extremities they are more acute, the former circumſtance tending to diminiſh, and the latter to increaſe the force of the Blood.

The Arteries form many Diviſions and Subdiviſions before they reach their Terminations, and at laſt become inviſible to the naked Eye.

The Diviſions formed by any ſingle Artery have been variouſly enumerated by different Authors,—one, in particular, reckoning them at forty, and another, of equal reſpectability, at twenty only;—their number, however, is ſuch as to allow them to ſupply the moſt minute parts of the Body.

The Strength of the Arteries depends upon the thickneſs of their Coats, which is found to vary in different Arteries.—In the Aorta, the Coats are thick and ſtrong;—in the Arteries of the Brain and Spleen, they are thin and tender;—but the Thickneſs and conſequent Strength are proportionally greater in the ſmall Branches than in the large Trunks.

The Arteries run more or leſs in a waving direction, which breaks the force of the Blood in them, and prevents them from being ſtrained by the motions of the parts to which they belong.

The Flexions are moſt frequent in Arteries belonging to parts the ſize and ſituation of which are changeable.

The Windings of many of the Arteries are in proportion to the degree in which they are diſtended, thoſe which are nearly ſtraight in their natural ſtate, frequently becoming ſerpentine when their diſtenſion is increaſed.

Several of the Large Arteries form Communications with each other, termed by Anatomiſts *Anaſtomoſes*; but the Anaſtomoſes are more frequent among the ſmall Branches, where they form a Plexus which leſſens the danger of Obſtruction.

The Anaſtomoſes are moſt frequent in the Skin and Membranous Parts. In the Solid Viſcera, the Arteries run in a different manner, being in ſome crowded together in the form of Trees or Buſhes, in others having a Serpentine appearance, and in ſeveral forming Penicilli, or little Bruſhes, according to the diſpoſition of the part.

The Arteries obtain their particular names from their Situations, Place of Deſtination, &c. and the term *Capillary*, as expreſſive of their ſmallneſs, is applied to their Minuteſt Branches.

The Diameters of the different Trunks and Branches of the Arteries, vary much in different parts of the Body; but thoſe of the Capillaries are more nearly equal to each other.

The Arteries terminate in the following manner, viz.

In Red Veins, as is obſerved by the aſſiſtance of the Microſcope and by Injections:

In Glands or Follicles, by Secretory Ducts, which ſeparate a Fluid from the general Maſs of Blood.

In Exhalent Veſſels, which diſcharge their Contents into the Internal Cavities, or upon the External Surface of the Body:

In Colourleſs or Lymphatic Branches, which are afterwards continued to the Circulating Veins, as in the Cartilages and Cornea.

The *Uſe* of the Arteries is,

To convey Blood from the Heart to the different parts of the Body:

To aſſiſt in converting the Chyle into Blood:

To nouriſh the Body, and promote its Growth:

To aſſiſt in preſerving the Fluidity of the Blood, and the Heat and Life of the Body

To form the different Secretions; and

To renew the Growth of parts deſtroyed by Accident or Diſeaſe.

VEINS.

THE *Veins* are Elaſtic Flexible Tubes, returning the Blood from the different parts of the Body to the Heart, —and have no Pulſation.

The *Coats* of the Veins are the ſame in number with thoſe of the Arteries, but are thinner, denſer, and leſs elaſtic.

In the Large Veins, as the Vena Cava, the Coats can be ſeparated from each other ;—but in the ſmall Branches their ſeparation is difficult.

The *Muſcular Coat* of the Veins being much thinner, looſe like Cellular Subſtance, and more indiſtinct than that of the Arteries, has occaſioned its exiſtence to be denied by many Authors.

The Veins are alſo furniſhed with their *Vaſa Vaſorum*, ſimilar to, and from the ſame ſource with thoſe of the Arteries.

The *Colour* of the Veins is ſomewhat blue, and when full of Blood they appear of a purple tinge, in conſequence of their thinneſs.

Their *Size* is more than double that of the Arteries to which they belong, excepting the Pulmonary Veins, the ſize of which ſcarcely ſurpaſſes that of their correſponding Arteries.

In the Fleſhy parts of the Body, particularly in the Extremities, they conſiſt of *Two Sets*, one *Deep-ſeated*, accompanying the Arteries, the other running immediately under the Skin, and termed *Subcutaneous.*

The Veins of the Thoracic and Abdominal Viſcera in general, accompany their Arteries; and the ſame is obſervable in the ſmall Branches belonging to Membranous parts.

The *Figure* of the Veins is ſimilar to that of the Arteries; and, upon comparing the Area of their Trunks with the collective Areæ of their Branches, like them too, they are perceived to be Conical, the Baſe of the Cone being formed by the Branches, and the Apex by the Trunks.

The Size and Number of the Veins is ſo much greater than that of their correſponding Arteries, that when the Veſſels of a Membranous part are diſtended by an Injection of different colours, the Veins are obſerved in a great meaſure to conceal the Arteries:—In the Inteſtines, however, the number of the Arteries and Veins is nearly equal.

There is much greater Variety among the Trunks of Veins, with reſpect to Situation and Diviſion into Branches, than is obſervable among the Arteries.

The Variety in Nature, in this reſpect, is ſuch, that the Veins of every Subject differ a little from thoſe of another.

The Veins are capable of ſuffering greater Diſtenſion than the Arteries, yet are more frequently ruptured.

The Anaſtomoſes are greater and more frequent in Veins than in Arteries, thoſe of the former being often by large Trunks, whereas thoſe of the latter, excepting in a few places, are by ſmall Branches only.

Where the Veins are expoſed to Muſcular action, they are furniſhed with *Valves*, which are Semilunar Folds continued from the inner ſide of the Veſſels, and placed in Pairs at irregular diſtances, their nature being ſimilar to thoſe of the Abſorbents.

The Valves are Concave towards the Heart, and, when cloſed or applied to each other, repreſent a figure ſomewhat like that of the ſhut end of a Thimble.

Between the Valves and Sides of the Veins next the Heart, the Blood inſinuates, and Cavities are formed, termed *Sinuſes* of the Valves, which appear externally in the form of Varices.

The Valves are found in the Fleſhy parts of the Body in general, but are chiefly ſituated in the Veins of the Extremities.

They are awanting in the Veins of the Deep-ſeated Viſcera, viz. in thoſe of the Cranium, Thorax, and Abdomen, excepting the Spermatic Veins, and ſometimes the Internal Mammary Veins, and the Branches of the Vena Azygos.

The Valves direct the Blood towards the Heart, and prevent Regurgitation.

The *Uſe* of the Veins is,

To convey the Blood from the extremities of the Arteries, with the Chyle and Lymph, from the Abſorbents to the Heart.

DISTRIBUTION OF THE BLOOD-VESSELS.

Of the PULMONARY ARTERY *and* VEINS.

THE *Pulmonary Artery* ariſes from the Right Ventricle of the Heart, and aſcends behind the Sternum, and within the Pericardium, inclining a little to the left ſide.

Having run as high as the concave ſide of the Arch of the Aorta, it divides into Right and Left Lateral Branches, which terminate in the correſponding ſides of the Lungs.

The Right Branch, which is the largeſt, paſſes behind the Curvature of the Aorta and the Superior Vena Cava, and is of courſe alſo the longer of the two.

The two Branches are diſperſed throughout the ſubſtance of the Lungs, by Ramifications which accompany thoſe of the Bronchi, and, becoming gradually ſmaller, terminate upon the Pulmonary Cells.

From the extreme Branches of the Pulmonary Artery, the Blood is returned by correſponding Veins.

The *Pulmonary Veins* run contiguous to the Arteries, and, unlike the other Veins in general, are nearly of the ſame ſize with their Arteries.

In their courſe they unite into larger Branches, which at length form Four Principal Trunks,—two from the Right, and two from the Left Lung,—which, after perforating the Pericardium, terminate in the Left Auricle of the Heart.

General Courſe of the AORTA *and* VENA CAVA.

The *Aorta* ariſes from the upper and back part of the Left Ventricle of the Heart, and ſends off, at its Origin, the *Coronary Arteries* formerly deſcribed.

Where it takes its Origin, it turns a little to the right, and is afterwards directed upwards, backwards, and towards the left ſide.

It aſcends as far as the top of the Thorax, under the name of *Aorta Aſcendens*, and is afterwards reflected obliquely backwards over the root of the left Branch of the Trachea, forming what is termed *Curvature* or *Arch* of the Aorta.

It then commences *Aorta Deſcendens*, which runs down cloſe upon the Spine, till it reaches the fourth Vertebra of the Loins, where it divides into the *Two Iliac Arteries*.

The Thoracic portion of the Aorta Deſcendens is ſituated on the fore and left part of the Spine, between the Layers of the Poſterior Mediaſtinum.

Where it paſſes from the Thorax to the Abdomen, it goes between the long Crura of the Diaphragm, after which it deſcends more immediately upon the fore-part of the Vertebræ.

The Aorta ſends off Arteries which carry Blood to the different parts of the Body, from whence it is returned by

Veins to the Inferior and Superior Vena Cava,— excepting what paſſes to the Coronary Veſſels.

The *Inferior Cava* is formed by the union of the two Venæ Iliacæ, upon the laſt Vertebra of the Loins, a little below the Termination of the Deſcending Aorta.

It is ſituated upon the fore-part of the Spine, and at the Right ſide of the Aorta, which it accompanies for a conſiderable way through the Abdomen.

Near the upper end of the Abdomen, it recedes from the Aorta, and paſſes behind the large Lobe of the Liver.

It perforates the Diaphragm in its Tendinous part, and having entered the Pericardium, it goes immediately into the Right Auricle of the Heart.

The Inferior Cava receives the Blood from the Inferior Extremities, from the Pelvis and Abdomen, and carries it to the Heart.

The *Superior Cava*,—formed by the union of the two Great Venæ Subclaviæ, with the addition of the Vena Azygos,—is ſituated in the upper part of the Thorax, upon the right ſide of, and a little more anteriorly than the Aſcending Aorta.

It begins behind the Cartilage of the firſt Rib, ſomewhat higher than the Arch of the Aorta, and has at firſt a ſmall inclination towards the right ſide.

After deſcending about an inch, it perforates the Pericardium, and having run down nearly twice this ſpace, it enters the Right Auricle, oppoſite to the termination of the Inferior Cava.

The Superior Cava receives the Blood from the Head, Neck, Arms, and Containing Parts of the Thorax, and alſo carries it to the Heart.

BLOOD-VESSELS OF THE HEAD, AND PART OF THOSE OF THE NECK.

ARTERIES.

FROM the upper ſide of the Arch of the Aorta, *Three Large Arteries* ariſe, which ſupply the Head, Neck, and Superior Extremities.

Of theſe Three Arteries, one on the right ſide, termed *Innominata*, ſoon divides into the *Right Carotid*, and *Right Subclavian Artery*.

The other two are the *Left Carotid*, and *Left Subclavian*, which come off in ſeparate Trunks.

CAROTID ARTERIES.—The Carotid Arteries, after emerging from the Thorax, aſcend upon the fore-part of the Vertebræ, on each ſide of the Neck, between the Trachea and Internal Jugular Veins, and behind the Sterno-maſtoid Muſcles, gradually receding from each other.

In the Neck, they do not ſend off any Branches till they reach the top of the Larynx, where each, oppoſite to the Os Hyoides, divides into *External* and *Internal Carotid Arteries*; the former ſupplying the outer parts of the Head, the other the Brain.

The EXTERNAL CAROTID is placed more anteriorly, and nearer the Larynx, than the *Internal*, which lies deeper, and is, at its Root, the larger of the two.

The External, though ſmaller than the other, appears as a continuation of the common Trunk.

It runs up behind the Angle of the Lower Jaw, towards the Temple, and in its paſſage before the Ear is ſunk deep in the ſubſtance of the Parotid Gland, which it ſupplies in its courſe, and is divided into the following principal Branches, viz.

The ARTERIA LARYNGEA SUPERIOR, GUTTURALIS SUPERIOR, or THYROIDEA SUPERIOR, which comes off from the Root of the External Carotid, and ſometimes from the Top of the Common Carotid.

It paſſes downwards and forwards in a winding direction, and ſends

Branches to the Muſcles under the Os Hyoides.—

Branches to the Sterno-maſtoideus, Platyſma Myoides, Jugular Glands, and Skin near the Larynx.

The *Laryngeal Branch* to the ſmall Muſcles and other parts peculiar to the Larynx.

The *Thyroid Branch*, which is the continuation of the Trunk, diſperſed upon the Subſtance of the Thyroid Gland. The Branches of the Laryngeal Artery communicate with their fellows on the oppoſite ſide. The Anaſtomoſes of the Thyroid Branches, however, are ſmall compared with the reſt.

The ARTERIA LINGUALIS, which is ſent off immediately above the former.—It goes forwards and upwards over the correſponding Cornu of the Os Hyoides, and under the Hyo-gloſſus Muſcle, in a direction towards the under and fore part of the Tongue.—It gives

A *Small Branch* to the Pharynx;—

A Branch, termed *Ramus Hyoideus*, to the Muſcles placed between the Tongue and Larynx ;—

The *Dorſalis Linguæ* to the Fauces, Amygdala, Epiglottis, and Pharynx ;—

The *Ramus Sublingualis*, which comes off under the middle of the Tongue, and is diſperſed upon the Sublingual Gland and adjacent Muſcles ;—and

The *Ramus Raninus*, which is the principal Branch of the Lingual Artery, running at the under and lateral part of the Tongue, and terminating near its Point.

The ARTERIA FACIALIS, MAXILLARIS EXTERNA, LABIALIS, or ANGULARIS, which alſo runs forwards, and goes under the Stylo-hyoid, and Tendon of the Digaſtric Muſcle.—It perforates the Submaxillary Gland, mounts ſuddenly over the Angle of the Lower Jaw, at the under and fore part of the Maſſeter Muſcle, from whence it proceeds in a tortuous manner by the ſide of the Noſe, towards the inner Corner of the Eye.

In this Courſe, it ſends the following Branches to the adjacent parts.

The *Palatina Inferior*, or *Aſcendens*, which runs upwards upon the ſide of the Pharynx, covered by the Styloid Muſcles, to be diſperſed, by a Superficial and Deep Palatine Branch, upon the Velum Palati and parts near it ;—

A *Branch* ſpread out by many Twigs upon the Tonſil, and reaching as far as the Tongue ;—

Branches to the Inferior Maxillary Gland ;—

Small Branches to the Root of the Tongue, to the Skin, Muſcles, &c. near the Angle of the Jaw ;—

The *Arteria Submentalis*, which advances between the anterior Belly of the Digaſtricus, the Mylo-hyoideus, and Baſe of the Lower Jaw, furniſhing Branches to the Submaxillary Gland, the Skin, Mylo-hyoideus, Chin, and Under Lip;—

A *Branch*, upon the outſide of the Jaw, to the Maſſeter Muſcle;—

The *Inferior Labial Artery*, which ariſes a little higher than the former, and goes to the lower part of the Under Lip, inoſculating with the correſponding Branch on the oppoſite ſide;—

Small Branches diſperſed upon the Buccinator Muſcle, and communicating with others diſperſed upon the Subſtance of the Cheek;—

The *Coronaria Inferior*, which comes off near the Corner of the Mouth, ſometimes from the Labialis Inferior;—and

The *Coronaria Superior*, larger than the former, to the Upper Lip, from whence Branches run to the under part of the Partition and Point of the Noſe.

The Coronary Arteries run near the edges of the Lips, where, meeting with their fellows of the oppoſite ſide, they form an *Arteria Coronaria Labiorum*.

Frequently one or both Coronary Arteries are larger than ordinary, in which caſe thoſe on the oppoſite ſide are proportionally ſmaller.

After ſending off the Coronary Branches, the Facial Artery runs near the Wing and ſide of the Noſe.

From this part of the Artery, Branches are ſent inwards to the Noſe, and outwards to the Cheek.

The Facial Artery is at laſt loſt upon the parts about the inner Corner of the Eye, and middle of the Fore-head.

The PHARYNGEA INFERIOR, or ASCENDENS, which is a ſmall Artery ariſing near the Lingual Artery, and frequently from the root of the Occipitalis.

After aſcending ſome way, it divides into Branches, which are diſperſed upon the Pharynx, Fauces, and Baſe of the Skull, where ſome of them enter the large Foramina, and ſupply part of the Dura Mater.—From this Artery, Twigs are alſo ſent to the Sterno-maſtoid Muſcle, Nerves and Conglobate Glands near it.

The ARTERIA OCCIPITALIS, which ariſes from the back-part of the External Carotid, and at its Origin is concealed by the other original Branches ſent off from that Artery.

It runs over the beginning of the Internal Jugular Vein, and afterwards paſſes between the Atlas and Maſtoid Proceſs, and poſterior Belly of the Digaſtric Muſcle.

It goes likewiſe under the upper ends of the Trachelo-maſtoideus, Splenius, and Complexus Muſcles; after which, it becomes more ſuperficial, where it runs near the middle of the Occiput.

In its courſe, it is very tortuous, and gives off different Branches to the ſurrounding Muſcles, viz.

Branches to the Digaſtricus, Stylo-hyoideus, Sterno-maſtoideus, and Glands of the Neck, and communicates with Branches of the Cervical Arteries.

Another Branch, which paſſes, with the Jugular Vein, to the under and back part of the Dura Mater:

A *ſmall Branch*, which is ſometimes from the Poſterior Auricular, and is diſtributed on the Lobe and outer edge of the Ear.

The *Auricularis Poſterior*, which comes frequently off from the Trunk of the Carotid.—It ſends Branches to the Parotid Gland, Digaſtric, and Sterno-maſtoid Muſcles,—a Branch to the Meatus Externus and Membrana Tympani,—the *Stylo-maſtoid Branch*, which paſſes through the Foramen Stylo-maſtoideum, giving Twigs to the Meatus Externus, Membrana Tympani, and Internal Ear.

The Auricular Artery paſſes afterwards behind the Ear, gives Branches to the Integuments, Muſcles, and Bones there, and, creeping upon the back-part of the Concha, ſends Twigs to it, and terminates upon the ſide of the Head.

The Occipital Artery gives next a Branch, of conſiderable ſize, which deſcends between the Trachelo-maſtoideus and Complexus Muſcles, and afterwards beſtows Branches to moſt of the Muſcles on this part of the Neck.

The Trunk of the Artery afterwards aſcends upon the Occiput, dividing into ſeveral Branches, which are diſperſed upon the Integuments and Occipito-frontalis Muſcle; communicating with the Occipital Artery of the oppoſite ſide, one Twig paſſing occaſionally through the Foramen Maſtoideum to the Dura Mater.

The ARTERIA MAXILLARIS INTERNA, which goes off from that part of the Trunk which is covered by the Parotid Gland, and at its origin lies behind the middle of the upright Plate which divides into the Condyloid and Coronoid Proceſſes of the Lower Jaw.

It paſſes firſt between the Jaw and External Pterygoid Muſcle, and afterwards aſcends, in a tortuous manner, towards the back-part of the Antrum Maxillare, ſending numerous Branches to the Parts belonging to both Jaws.

At its Origin, it furniſhes Twigs to the fore-ſide and adjacent parts of the Outer Ear.

It then ſends off the *Arteria Duræ Matris Media Maxima*, *Meningea*, or *Spheno-ſpinalis*, which runs between the External and Internal Carotids, paſſes through the Foramen Spinale of the Sphenoid Bone, and ſpreads over the ſurface of the Dura Mater and inſide of the Parietal Bone, like the Branching of a Tree.

Before entering the Foramen Spinale, it ſometimes gives Twigs to the Muſcles and other parts near it, and within the Cranium, beſides the Branches mentioned above, it furniſhes Twigs to the Subſtance of the Bones, and to the Inner Ear.

The *Inferior Maxillary* Branch, which runs in the Inferior Maxillary Canal, ſending Branches to the ſubſtance of the Bone, and to the Teeth;—the remainder of it paſſing out at the Anterior Maxillary Foramen, communicating upon the Chin with Branches of the Facial Artery.

Branches to the Pterygoid, Maſſeter, and inner part of the Temporal Muſcle, under the names of *Arteriæ Pterygoideæ*, *Maſſetericæ*, and *Temporales Profundæ*:

The *Arteria Buccalis* to the Buccinator Muſcle and other ſoft parts of the Cheek.

The *Arteria Alveolaris*, which runs behind the Antrum, and ſends Branches to the ſoft parts ſurrounding the Upper Jaw.—It ſends other Branches which enter by ſmall Holes to the Antrum, and to the Subſtance and back-teeth of the

Jaw, one of which is larger than the reſt, and is the *Proper Alveolaris.*

The *Infra-orbitar*, which paſſes in the Canal under the Orbit, giving, at its entrance, Twigs to the ſoft parts in the bottom of the Orbit, and, in its progreſs, other Twigs to the Antrum, Subſtance of the Jaw, and Fore-Teeth; after which it goes out at the Foramen Infra-orbitarium, and terminates on the Cheek by ſmall Branches which communicate with thoſe of the Facial Artery.

The *Palato-Maxillary* Branch, or *Palatina Deſcendens*, which paſſes through the Foramen Palatinum Poſterius, and runs between the Oſſeous and Fleſhy parts of the Palate, ſupplying theſe with Branches; communicating with the Palatina Inferior, and frequently proceeding through the Foramen Inciſivum to the inner part of the Noſe.

The *Superior Pharyngeal*, which is a ſmall Branch terminating in and about the upper part of the Pharynx.

The *Large Lateral Naſal*, which enters the Foramen Spheno-palatinum, and divides, at the upper and back part of the Noſe, into many Branches, which ſupply the greater part of the inſide of the Noſe, viz. a Branch to the Poſterior Œthmoid Cells,—a larger Branch to the Septum Narium,—a conſpicuous Branch paſſing through the Spongy Bones to the bottom of the Noſe, furniſhing Twigs to the Membrana Schneideriana and Antrum Maxillare, and communicating with the Palato-maxillary paſſing through the Foramen Inciſivum.

ARTERIA TEMPORALIS.—The Trunk of the External Carotid, having given off the Arteries already mentioned, paſſes up between the Meatus Auditorius and root of the

Zygoma, and forms the *Temporal Artery*, named alſo *Temporalis Externa*, or *Superficialis* ;—from the root of which are ſent off ſeveral Branches, of unequal ſize, to the Parotid Gland.

The *Tranſverſalis Faciei*, which ariſes nearly oppoſite to the Internal Maxillary. It proceeds tranſverſely under the Zygoma, over the Maſſeter Muſcle and near the Parotid Duct. After giving Branches to the Parotid Gland, it ſupplies a large portion of the Cheek, communicating with the Facial and Internal Maxillary Arteries.

The Articular Artery ſends Branches to the Articulation of the Jaw, the External Meatus and Membrana Tympani, and penetrates as far as the Inner Ear, communicating with the Anterior Stylo-maſtoidea.

The Deep *Temporal Branch*, ſent off behind the condyle of the Jaw. It aſcends obliquely forwards under the Aponeuroſis of the Temporal Muſcle to the outer part of the Orbit.

Anterior Auricular Branches, which come off near the Origin of the former Branch, and are ramified upon the fore-part of the Ear, inoſculating there with the Poſterior Auricular Artery.

Branches to the Maſſeter Muſcle, which communicate in the Cheek with the Facial and Internal Maxillary Arteries.

The Temporal Artery having detached the Branches mentioned above, forms one or two ſharp Turns before the Ear, and a little above the root of the Zygoma, where the Pulſation of the Artery can be felt, and frequently even ſeen, it divides into Two Large Branches, an *Anterior*

terior and *Poſterior,* which are placed ſuperficially between the Integuments of the Head and Aponeuroſis of the Temporal Muſcle.

The *Anterior, Internal Anterior,* or *Temporo-frontal Branch,* advances in a Serpentine direction, ſpreading out its Ramifications upon the ſide and upper part of the Fore-head, ſome of which reach as far as the Orbit.

It ſupplies the Integuments and Muſcles near it, communicates, about the Orbit, with the Facial Artery, and at the upper part of the Head, with the correſponding Branch of the other ſide.

It occaſionally gives a Branch from near its Root, termed *Ramus Orbicularis,* which runs towards the outer Corner of the Eye, to be diſtributed upon the Orbicularis Muſcle.

The *Poſterior,* or *External Poſterior,* or *Temporo-occipital* Branch, appearing as the continuation of the Trunk. It aſcends obliquely backwards, and is diſtributed extenſively on the Integuments and Muſcles upon the lateral parts and Crown of the Head, communicating with the Anterior Branch, and with the Occipitalis on the ſame ſide of the Head, and alſo with the Poſterior Temporal Branch of the oppoſite ſide,—from which, and from the other Branches on the Head, numberleſs Twigs go to the Pericranium, and to the Subſtance of the Bone.

INTERNAL CAROTID ARTERY.

THE INTERNAL CAROTID,—ſometimes termed *Arteria Cerebralis,*—is arched back at its Origin, and then aſcends in a waving direction on the fore-part of the Rectus Capitis Anterior Major Muſcle, as far as the Foramen Caroticum, without giving off any Branches.

At the Baſe of the Cranium, it makes a ſudden turn forwards, and enters the Carotic Canal of the Temporal Bone.—While in the Canal, it paſſes upwards and forwards like the Canal itſelf, and is ſurrounded by a conſiderable quantity of Cellular Subſtance, and by the Dura Mater, which form a Cuſhion between it and the Bone.

After leaving the Canal, it again bends upwards and then forwards, by the ſide of the Sella Turcica; and perforating the Dura Mater, at the root of the Anterior Clinoid Proceſs, it is ſuddenly reflected obliquely backwards and upwards, after which it divides into Branches.

Through the whole of its courſe, it runs in a Serpentine manner, which prevents the Blood in it from ruſhing too quickly and forcibly upon the tender Subſtance of the Brain, and,—contrary to the nature of other Arteries,—it is of a Conical form, though it does not ſend off any Branches till it enters the Cranium.

While at the ſide of the Sella Turcica, it furniſhes ſmall Twigs to the Dura Mater and Parts adjacent, as—A Branch which paſſes through the Pars Petroſa to the Tympanum,—A Branch termed *Poſterior*,—and another termed *Anterior Artery* of the *Cavernous Sinus*, to the Dura Mater, Glandula Pituitaria, and Nerves at the ſide of it.

As ſoon as the Carotid perforates the Dura Mater, at the root of the Clinoid Proceſs, it tranſmits

The ARTERIA OPHTHALMICA, which is the Principal Artery belonging to the Eye and its Appendages.

The Ophthalmic, or Ocular Artery, immediately after it comes off from the Carotid, enters the Foramen Opticum, and creeps under the Optic Nerve, included in the Dura Mater, towards the outer part of the Orbit.

After proceeding ſome way through the Orbit, it traverſes its Cavity, taking a Spiral direction towards the Noſe, between the Optic Nerve and Muſcles in the upper part of the Orbit.

In this courſe, it firſt tranſmits Filaments to the Dura Mater and Subſtance of the Optic Nerve, and to the beginning of the Muſcles in the bottom of the Orbit, after which it gives off the following Branches, viz.

The *Arteria Lacrymalis*, which runs at the outſide of the Orbit, and is chiefly diſperſed upon the Lacrymal Gland, ſome Threads advancing to the Eye-lids. One Twig to the Perioſteum of the Orbit, and another through the Cheek-Bone.

The *Arteria Centralis Retinæ*, which penetrates the Optic Nerve a little behind the Ball of the Eye,—runs in the centre of the Nerve, and ſpreads out into many ſmall Branches upon the inſide of the Retina.

When the Nerve is cut acroſs, the orifice of the divided Artery is obſervable, which, before its nature was underſtood, was long known by the name of *Porus Opticus*.

In the Adult, the Central Artery appears to terminate entirely upon the Retina; but in the Fœtus, after furniſhing, at the bottom of the Orbit, the Branches proper to the Retina, the Trunk is continued forwards through the Axis of the Vitreous Humour, ſupplying its Cells and Membrane with delicate Filaments, and afterwards ſpreading out upon the back-part of the Capſule of the Lens.

Its Branches are diſperſed upon the Lens in a radiated manner, and, after ſurrounding it, ſome of them are ſent forwards to the Membrana Pupillaris.

The *Arteriæ Ciliares*,—two or ſometimes more in number,—which divide into Branches running in a Serpentine direction along the oppoſite ſides of the Optic Nerve, and dividing into the Ciliares Breves, and Ciliares Longæ.

The *Ciliares Breves*, or *Poſteriores*,—formed not only of Branches from the original Ciliary Trunk, but alſo of Twigs from the Muſcular Branches,—are numerous. They perforate the Sclerotica, near the Inſertion of the Optic Nerve, give Twigs to that Coat, and dividing into ſtill ſmaller Branches, creep forwards upon the Tunica Choroides;—forming many Communications with each other as they advance, and retiring gradually from the convex to the concave ſurface of this Coat, to ſupply the Iris and Ciliary Proceſſes.

The *Ciliares Longæ*,—which ſeldom conſiſt of more than two Trunks,—perforate the Sclerotica a little farther forwards than the former, paſs along the Choroid Coat to its anterior part, and then each ſeparates into two Branches, and theſe into others which inoſculate round the outer edge of the Iris.

Beſides the Ciliares Breves et Longæ, there is another Set, termed *Ciliares Anteriores*, which are a few Arterious Filaments from the Muſcular Branches, entering the Eye where the Straight Muſcles are inſerted.

At the root of the Iris, different Sets of Ciliary Arteries unite into Arches, which form an irregular Circle, called *Circulus Iridis.*

From this Circle, many Arteries run upon the Iris, in a radiated ſerpentine manner, towards the Pupil, near which ſeveral of them alſo unite into Arches; and from theſe, Twigs are ſent, along with the reſt of the radiated Branches, to the inner edge of the Iris.—In the Fœtus, they are continued to the Membrana Pupillaris.

The *Muſcularis Superior*, and *Muſcularis Inferior*, which are diſperſed upon the Muſcles, Membranes, and Fat of the Eye, giving Twigs alſo to the Sclerotic Coat.

The *Ethmoidalis Anterior*, and *Poſterior*, two extremely ſmall Twigs, eſpecially the latter, which paſs through the Foramina Orbitaria Interna,—Anterius, et Poſterius,—to the Bones and Membranes of the Noſe, particularly to the Frontal, Œthmoid, and Sphenoid Sinuſes, where they communicate with the Naſal Branches of the Internal Maxillary Artery.

The *Supra-orbitalis*, or *Frontalis*, which, after giving Branches to the Muſcles and Perioſteum at the upper and fore part of the Orbit, emerges from the Socket, paſſes through the Foramen Supra-orbitarium, and is divided into two parts;—one diſperſed upon the Perioſteum of the Fore-head, the other running to the Skin and Muſcles on the Fore-head and upper Eye-lid, and communicating with the anterior Branch of the Temporal Artery.

Arteries of the Brain.

The Arteries of the Brain conſiſt of the two *Internal Carotids*, and the two *Vertebrals*.

Each Internal Carotid, after ſending forwards the Ocular Artery, gives a number of Separate Twigs to the Optic Nerve, the Infundibulum, and the Choroid Plexus, and ſends a particular Branch backwards to the Vertebral, termed *Arteria Communicans*, and then divides into the *Arteria Anterior*, and *Arteria Media Cerebri.*

The Arteria Anterior Cerebri turns towards its fellow of the oppoſite ſide, and commonly ſends Filaments to the Firſt and Second Pair of Nerves.

A little before the union of the Optic Nerves, the right and left Anterior Cerebral Arteries become almoſt contiguous, and anaſtomoſe by means of a ſhort, but large tranſverſe Branch, which forms part of that Communication of Veſſels termed *Circus Arterioſus* Willisii.

From this tranſverſe Branch, but more frequently from the Anterior Cerebral Artery near it, a Branch is ſent off, which paſſes into the Third Ventricle, and furniſhes Twigs to the Septum Lucidum, and fore-part of the Fornix.

The Anterior Cerebral Artery aſcends upon the inner ſide of the anterior Lobe of the Brain, and ſends off a principal Branch, and commonly another ſoon after, both of which arch backwards upon the inner flat ſurface of the Hemiſphere.

The continuation of the Anterior Cerebral Artery is termed *Arteria Corporis Calloſi*, and is reflected back upon the union of the Corpus Calloſum and Hemiſphere as far as the poſterior Lobe of the Brain.

The Branches of the Anterior Cerebral Artery are divided into minute Ramifications, which are firſt ſpread out upon the flat ſurface of the Hemiſphere, and afterwards upon its upper part.

The Ramifications form numberleſs Anaſtomoſes with each other upon the ſurface of the Brain, and afterwards paſs, by minute Filaments, into its Cortical and Medullary Subſtance.

Beſides the Anaſtomoſes of the different Branches of this Artery on the ſurface of the Hemiſphere, ſmall Branches run acroſs the Corpus Calloſum, and inoſculate with thoſe of the oppoſite ſide.

The ARTERIA MEDIA CEREBRI, termed alſo ARTERIA FOSSÆ SYLVII,--which is larger than the former,--runs outwards in a lateral direction through the *Foſſa* of SYLVIUS, to the outer part of the Brain.

It gives firſt Filaments to the Glandula Pituitaria and parts adjacent to it, and then divides into principal Branches, of which one Set go to the Anterior, and the other to the Lateral and part of the Poſterior Lobe of the Brain.

From this Artery, one or two Twigs run up into the anterior Cornu of the Lateral Ventricle, and aſſiſt in forming the Choroid Plexus of that Cavity.

Upon the outer ſurface of the Brain, the Branches of this Artery inoſculate with each other, and with thoſe of the Anterior Cerebral Artery, and then plunge into the ſubſtance of the Brain, where they meet with the Deep Branches of that Artery.

VERTEBRAL ARTERIES.

The two *Vertebral Arteries*,—which are only a little ſmaller than the Internal Carotids,—ariſe from the Subclavian Arteries at the bottom of the Neck.

Each of them, at a ſmall diſtance from its origin, enters the Canal formed for its reception by the ſix uppermoſt Cervical Vertebræ.

It aſcends through the Neck, nearly in a ſtraight direction, ſending Twigs outwards between the Vertebræ to the deep Muſcles of the Neck, and others which paſs inwards by the Holes which tranſmit the Spinal Nerves, to the Spinal Marrow and its Membranes; communicating with the Spinal Arteries.

Immediately below the Head, it gives out more conſiderable Branches to the Deep Muſcles at the back-part of the Neck, particularly to the Recti and Obliqui Poſtici, the Trachelo-maſtoideus, and Complexus; inoſculating with Branches of the Occipital Artery.

At the upper part of the Neck, it forms Contortions ſomewhat ſimilar to, and anſwering the ſame purpoſe with thoſe of the Internal Carotid Artery.

One turn is formed upwards and outwards, in paſſing from the third to the ſecond Vertebra; and another outwards and forwards, in going between the ſecond Vertebra and Atlas.

After perforating the Atlas, it bends ſuddenly back, and runs in an horizontal direction in a Notch upon that Bone.

Having reached the Foramen Magnum Occipitis, it turns upwards, perforates the Dura Mater, and enters the Cavity of the Cranium.

After entering the Cranium, it paſſes with the Medulla Oblongata, upon the Cuneiform Proceſs of the Occipital Bone, inclining towards its fellow on the other ſide, and at the beginning of the Medulla, the two Vertebrals unite into the Trunk called *Baſilar Artery*.

Upon entering the Skull, each Vertebral Artery ſends a ſmall Branch, termed *Arteria Meningea Poſterior*,—to the poſterior part of the Dura Mater.

It then diſperſes Twigs to the Medulla Oblongata, and frequently gives off the ſmall Branch which forms the *Poſterior* Artery of the Spinal Marrow.

Near the part where it unites with its fellow, it ſends down the *Anterior* Artery of the Spinal Marrow.

From the Vertebral, or from the Baſilar, or ſometimes from each, a principal Branch is ſent off, named *Arteria Cerebelli Poſterior*, or *Inferior*, which paſſes between the Cerebellum and Medulla Oblongata, and furniſhes Branches to the under part of the Cerebellum, to the back-part of the Medulla Oblongata and Tuber Annulare, and forms the Choroid Plexus of the Fourth Ventricle.

The BASILAR ARTERY runs along the middle of the Tuber Annulare, which it ſlightly impreſſes, and lies upon the Cuneiform Proceſs of the Occipital Bone.

From the ſides of this Artery, numerous Filaments run tranſverſely, to be diſperſed upon the Tuber and adjacent parts.

One Branch, larger than the reſt, called *Auditoria Interna*, paſſes between the two portions of the Seventh Pair of Nerves to the Internal Organ of Hearing.

At the extremity of the Cuneiform or Baſilar Proceſs of the Occipital Bone, and at the upper and fore part of the Tuber Annulare, the Baſilar Artery divides into four principal Branches, two to each ſide, and theſe go off almoſt at right angles from the Trunk, viz.

The *Arteria Superior*, or *Superior Cerebelli*, which turns round the Crura Cerebri, expands its Branches upon the upper part of the Cerebellum, and ſinks into its ſubſtance, ſupplying alſo the Nates, Teſtes, and Parts near them.

The *Arteria Poſterior*, or *Profunda Cerebri*, which ſends Twigs to the Tuber and to the Crura Cerebri, and unites with the Internal Carotid by the Arteria Communicans.

It ſupplies alſo Parts lying near the Third Ventricle, and afterwards turning round the Crura Cerebri, paſſes back between the Cerebrum and Cerebellum.

It diſtributes its numerous Branches chiefly to the Poſterior Lobe of the Brain, one Branch in particular penetrating into the poſterior Cornu of the Lateral Ventricle, and with Branches of the Internal Carotid, forming the Arterious part of the Choroid Plexus.

The Branches of this Artery anaſtomoſe with thoſe of the anterior part of the Internal Carotid, at the inſide of the Hemiſphere,—and with thoſe of the lateral part of that Artery, at the outſide of the Hemiſphere, in the manner theſe do with each other in the other parts of the Brain.

The *Arteria Communicans*, which unites the poſterior Cerebral Branch of the Vertebral Artery to the Trunk of the Internal Carotid, and is nearly of the ſame diameter, but longer than that tranſverſe Artery which connects the anterior Branches of the Internal Carotid.

It ſends minute Threads to the Crura Cerebri, &c. and contributes to the formation of the *Circle of WILLIS*,—or that kind of Communication by which the Blood or Injected Matter can paſs readily acroſs from one Internal Carotid to the other,—or from theſe backwards to the Baſilar Artery.

VEINS OF THE HEAD AND OF PART OF THE NECK.

The Veins which return the Blood from the Arteries of the Head and Neck, unite into the following Trunks, viz.

The *Facial Vein*, which is formed by the Frontal Vein, and by an intricate Plexus of Branches upon the Face.

It winds obliquely downwards and outwards, at a diſtance from the Artery; but, in croſſing the Jaw, it goes cloſe by the outſide of it, and terminates in the External Jugular Vein.

The *Temporal Vein*, formed by Superficial and Deep Branches from the ſides and upper part of the Head, and running down upon the Temple at ſome diſtance from the Artery.

The Branches of the Temporal Vein form large Anaſtomoſes, before, with thoſe of the Frontal Vein ; above, with their Fellows on the other ſide ; and behind, with the Branches of the Occipital Vein.

The Trunk deſcends at the fore-part of the Ear, and, along with the Artery, is ſunk in the Subſtance of the Parotid Gland.

In its deſcent before the Meatus Auditorius Externus, it receives Branches from the Ear, Parotid Gland, and Cheek, correſponding with thoſe ſent to theſe Parts from the Carotid, or Temporal Artery.

At the under part of the Lower Jaw, the Facial and Temporal Veins commonly unite and form the External Jugular.

The *External Jugular Vein* receives the following Branches at the upper part of the Neck, viz.

Branches of the Internal Maxillary Vein, the principal part terminating in the Internal Jugular.

The *Lingual Vein*, one Branch of which, termed *Ranina* from its complexion, is ſeen under the Tongue, and is that Vein which is opened in the Veneſection of this Organ.

Some *Branches* from the Occipital Vein, the reſt paſſing to the Internal Jugular and Vertebral Veins, and ſometimes alſo communicating by a Foramen Maſtoideum with the Lateral Sinus.

The Trunk of the External Jugular Vein deſcends in the Neck, between the Platyſma Myoidés and Sterno-maſtoideus, receives in its courſe Branches from the adjacent parts, and terminates in the Subclavian Vein.

In the formation and termination of this Vein, there is great Variety in different Subjects.

It frequently happens that moſt of the Ramifications, which commonly run from the Face and Throat into this Vein, go to the Internal Jugular.

Often the Facial Vein goes into the Internal Jugular, and the Temporal continued forms the External Jugular.

Sometimes one of the External Jugulars terminates in the uſual way, and the other in the Internal Jugular.

In ſome rare Caſes, the External Jugulars have both been found terminating in one ſide of the Neck.

Anterior External Jugular Vein.—Beſides the Vein commonly called External Jugular, a ſmall Subcutaneous Vein, termed *Anterior External Jugular*, deſcends in the fore-part of the Neck, receiving Branches from the adjacent parts, and terminating in the Subclavian Vein.

VEINS OF THE EYE AND ITS APPENDAGES.

The Blood ſent to the Contents of the Orbit is returned partly to the Facial Vein at the inner Corner of the Eye, but chiefly to the Proper Ocular Vein, which terminates in the Cavernous Sinus by the following Veins, viz.

The *Vena Centralis Retinæ*, which is formed by many ſmall Branches expanded upon the inner ſurface of the Retina along with thoſe of the correſponding Artery.

The Vena Centralis enters the Optic Nerve, where the Artery leaves it; and a little behind the Ball of the Eye, it emerges from the Nerve, and runs between it and the Sheath which covers it, receiving many Twigs from the Nerve and its Membranes.

It paſſes afterwards under the Faſciculus of Nerves, which belongs to the Eye, and terminates, ſometimes in the Ocular Vein, but, in general, directly in the Cavernous Sinus.

From the Iris and Choroid Coat, the Blood is returned by the *Short* or *Anterior Ciliary Veins*, and by the *Long* or *Poſterior Ciliary Veins*, and alſo by a principal ſet of Ciliary Veins, termed *Vaſa Vorticoſa*.

Small Veins return from the Iris, which go under the Arterious Circle to the Veins of the Choroid Coat, and communicate with each other;—but without forming any Circle, ſuch as is found in the Eyes of Oxen, and which correſponds, in them, with the Arterious Circle.

The *Short Ciliary Veins* paſs from the Iris through the Sclerotic Coat, near the ſame part where the Anterior Ciliary Arteries enter.

The *Long Ciliary Veins*, like the Arteries, are commonly two in number, and of a ſmaller ſize than the Vorticoſe Veins.

They run from the Iris backwards along the Choroid Coat, communicate in their paſſage by minute Branches with the Vorticoſe Veins, and afterwards perforate the Tunica Sclerotica behind.

The *Venæ Vorticoſæ* are numerous, and obtain their name from the Whirls compoſed by their Branches, the courſe of which has been compared to a *Jet d'eau*, or to the Spiral Ridges upon the points of the Fingers, &c.

Of theſe Veins, four, or ſometimes five, are by much the moſt conſpicuous, the reſt being ſmaller, and having leſs of the Vorticoſe appearance.

The Branches of each of the four principal Venæ Vorticoſæ run in a cloſe congeries, unite at acute angles into larger Branches which have a curved direction, and theſe proceeding from all ſides, meet in a point, and form the Trunk of the Vein.

The Trunks of theſe Venæ Vorticoſæ, thus placed in the centre of their reſpective Whirls, are ſituated at the oppoſite ſides of the Eye, and perforate the Sclerotic Coat obliquely near its middle.

The reſt of the Venæ Vorticoſæ, or ſmaller Ciliary Veins, communicate with the adjacent larger Vorticoſe Veins upon the ſurface of the Choroid Coat, and alſo perforate the Sclerotica near its middle.

After piercing the Sclerotica, the different Vorticoſe Veins unite into four or five ſmall Ciliary Trunks, receiving a number of minute Twigs, which paint the Cellular Subſtance covering the ſurface of the Sclerotica.

The Ciliary Veins run in a Serpentine direction at the oppoſite ſides of the Eye, and paſs, either ſeparately, or united with other ſmall Veins in the Orbit, into the Trunk of the Ocular Vein.

The other Venous Branches within the Orbit, correſpond in a great meaſure with their reſpective Arteries.—They conſiſt of—

Branches from the Palpebræ and inner Corner of the Eye:

The *Lacrymal Branch* :

The *Ethmoidal Branches* :

Muſcular Branches,—and *Branches* from the Fat in the Orbit, and from the Membranes lining it.

The different Branches from the Eye and its Appendages form, by their union, the *Ocular Vein*, which greatly exceeds the ſize of the correſponding Artery.

The *Ocular Vein* forms large Anaſtomoſes, at the inner Corner of the Eye, with the Facial Vein, and afterwards paſſes back at the inner ſide of the Orbit.

From the inner, it goes acroſs to the outer ſide of the Orbit, under the Attollens Muſcle; and, after running back through the Superior Orbitar Fiſſure, covered by the Third and Sixth Pair of Nerves, it terminates in the Cavernous Sinus.

VEINS OF THE DURA MATER CORRESPONDING WITH ITS ARTERIES.

The *Veins of the Dura Mater* accompany their Arteries, and go partly through Perforations in the Baſe of the Cranium, to terminate in Branches of the External or Internal Jugular Veins.—The reſt go into the neareſt Sinuſes of the Brain.

VEINS OF THE BRAIN.

The ſmaller Veins of the Brain accompany the Arteries. Their Trunks run chiefly between the Circumvolutions of the Brain, at a diſtance from the Trunks of the Arteries.

They terminate in the different *Sinuſes* of the Dura Mater, and generally in an oblique direction, which prevents the Blood from returning into them.

The Sinuſes moſt commonly found are the following:

The *Superior Longitudinal Sinus*, which begins at the under part of the Spine of the Frontal Bone,—runs along the upper edge of the Falx,—and becoming gradually wider,—terminates upon the middle of the Occipital Bone, in the two Lateral Sinuſes.

It receives the Blood from the upper part of the Brain, by ſeveral large Venous Trunks, which enter it obliquely forwards.

The *Torcular Herophili*, or *Fourth* Sinus of the Ancients, chiefly formed by the Vena Galeni, which returns the Blood from the Choroid Plexus, Corpora Striata, Septum Lucidum, and other Internal parts of the Brain.

The Torcular paſſes back in the joining of the Falx and Tentorium, and terminates, along with the Superior Longitudinal Sinus, in the beginning of the Lateral Sinuſes.

The *Inferior Longitudinal Sinus*, a remarkably ſmall one, ſituated in the under edge of the Falx.—It receives Branches from that Membrane, and from the Corpus Calloſum and parts of the Brain near it, and terminates in the beginning of the Torcular Herophili.

The *Two Lateral Sinuſes*, or *Second* and *Third* Sinuſes of the Ancients, formed by the Longitudinal and Torcular Sinuſes.

They run at the poſterior edge of the Tentorium, along the lateral Ridges of the Os Occipitis, as far as the Baſe of the Petroſal Proceſſes of the Temporal Bones, from whence they wind downwards, paſs through the Foramina Lacera common to the Occipital and Temporal Bones, and terminate in the Internal Jugular Veins.

Frequently one of the Lateral Sinuſes is formed by the Longitudinal, and the other by the Torcular Sinus; in which caſe, the one is found larger than the other.

The Lateral Sinuſes receive Veins from the Cerebellum and from the under and back part of the Cerebrum. They likewiſe receive the following ſmall Sinuſes, ſituated under the Brain, viz.

The *Circular Sinus of* RIDLEY, which is placed about the Glandula Pituitaria, and frequently ſurrounds it completely, receiving the Blood from it and from the adjacent Bones and Membranes, and terminating in the Cavernous Sinuſes:

The *Cavernous Sinuſes*, which are ſituated at the ſides of the Sella Turcica, and receive Blood from Veins lying near the lateral Branches of the Internal Carotid Arteries, from the Ocular Veins, and from the Circular Sinus of RIDLEY.

The Cavernous Sinuſes ſurround the Carotid Arteries and Sixth Pair of Nerves, and have a Cavernous ſtructure within, ſomewhat reſembling that of the Penis.

The *Superior Petroſal Sinuſes*, ſituated upon the Ridges of the Partes Petroſæ.

They receive ſome ſmall Veins from the Dura Mater and Baſe of the Brain, and communicate backwards with the Lateral, and forwards with the Cavernous Sinuſes.

The *Inferior Petroſal Sinuſes*, placed at the roots of the Partes Petroſæ.—They receive the Blood from the Cavernous, and diſcharge it into the ends of the Lateral Sinuſes.

Beſides the Sinuſes mentioned above, the following alſo are frequently met with, viz.

A *Perpendicular Occipital Sinus*, ſituated in the Falx Cerebelli, which is ſometimes ſingle, ſometimes double, and terminates in the Lateral Sinuſes.—It receives Veins from the Dura Mater, and communicates with the Vertebral Veins.

Anterior Superior, and *Anterior Inferior Occipital Sinuſes*, placed over the Cuneiform Proceſs of the Occipital Bone, and communicating with the Inferior Petroſal and Lateral Sinuſes, and with the Vertebral Veins.

INTERNAL JUGULAR VEIN.

The Lateral Sinuſes, having received the Blood ſent to the Brain from the Carotid and Vertebral Arteries, paſs out of the Cranium, and form the *Internal Jugular Veins*; each of which, at its Origin, is bulged back in form of a Varix, which is termed *Diverticulum*; and this is lodged in a Foſſa at the root of the Pars Petroſa of the Temporal Bone.

The INTERNAL JUGULAR VEIN deſcends behind the Sterno-maſtoid Muſcle, upon the fore and outer part of the Common Carotid Artery, with which it is included in a Sheath of Cellular Subſtance; and is frequently a good deal dilated towards its under Extremity, eſpecially in advanced life.

In its courſe in the Neck, it receives

Branches from the Pharynx and Muſcles adjacent to it:

The *Internal Maxillary Vein*:

One or more *Branches* from the Occiput:

The *Lingual Vein*, which ſometimes terminates in the External Jugular:

The *Superior Laryngeal*, and now and then the *Inferior Laryngeal*, which more frequently goes into the Subclavian, or to the Top of the Cava.

The Internal Jugular alſo receives *Branches* from the Muſcles of the Neck, and at length terminates in the Subclavian Vein.

THE REMAINING BLOOD-VESSELS OF THE NECK, WITH THOSE OF THE SUPERIOR EXTREMITY IN GENERAL.

ARTERIES.

SUBCLAVIAN ARTERY.

The Subclavian Artery has been already obſerved to ariſe, on the right ſide, in common with the Carotid, by a Trunk called *Arteria Innominata*; and on the left, to come off directly from the Aorta.

ARTERIA INNOMINATA.—The Arteria Innominata, named alſo *Right Subclavian*, which is ſcarcely two inches in length, aſcends obliquely over the Trachea, at the right ſide of which it divides into the *Right Proper Subclavian*, and the *Right Common Carotid.*

The *Left Subclavian* ariſes from the Arch of the Aorta, at the outſide of the Carotid, and aſcends to the upper part of the Thorax, forming there a ſharper or more extenſive Curvature than the Subclavian of the right ſide.

After the two Subclavians have emerged from the Thorax, each paſſes tranſverſely outwards at the under part of the Neck, behind the Origin of the Sterno-maſtoid Muſcle, and continues its courſe outwards between the Anterior and Middle Scaleni Muſcles, and between the Subclavian Muſcle and firſt Rib.

After croſſing the firſt Rib, it goes under the Pectoral Muſcles to the Axilla, where it obtains the name of *Axillary Artery.*—In this courſe, it ſends off the following Branches, viz.

The *Vertebral*;—the *Internal Mammary*; and—the *Superior Intercoſtal Artery.*—The firſt of theſe has been already deſcribed: The two others belong to the inner part of the Thorax.—It alſo gives off—

The THYROIDEA, or GUTTURALIS INFERIOR, which ariſes at the outer ſide of the Vertebral Artery, previous to the paſſage of the Subclavian under the Scalenus Muſcle. It aſcends obliquely inwards in a winding manner behind the Carotid Artery, gives Branches to the Trachea, which deſcend in the Thorax and inoſculate with the Bronchial Arteries, alſo Twigs to the Larynx, Pharynx, and Œſophagus; while the moſt conſiderable part of the Artery is diſperſed upon the Thyroid Gland, inoſculating with the Superior Laryngeal Artery.

The CERVICALIS ANTERIOR, which frequently comes off from the root of the Inferior Thyroid, and aſcends in the Neck, furniſhing Superficial Branches to the Muſcles which go from the Trunk of the Body to the Neck, and Deep Branches to the Glands, Nerves, &c. lying on the fore and lateral parts of the Cervical Vertebræ.

The Deep Branches anaſtomoſe with the Vertebral and Occipital Arteries; and ſome paſſing through the Intervertebral Holes where the Nerves come out, communicate with the Spinal Arteries.

The CERVICALIS POSTERIOR, which ariſes in common with the Anterior Cervical, or with the Inferior Thyroid. —This is larger than the former, lies farther out, and runs in a winding direction outwards and upwards.

It ſupplies the Skin and Muſcles at the lateral and back-part of the Neck, communicates with Branches of the Occipital and Vertebral Arteries, and ſends a principal Branch downwards to the parts about the top of the Shoulder, and upper and lateral parts of the Thorax.

The DORSALIS SUPERIOR SCAPULÆ, which comes frequently from the root of the Thyroid, and runs tranſverſely behind the Origin of the Sterno-maſtoid Muſcle, near the Clavicle. It afterwards perforates the Notch in the ſuperior Coſta of the Scapula, and, expanding its Branches upon the Dorſum of that Bone, ſupplies the Spinati and other Muſcles ſituated there, and likewiſe furniſhes Branches to the Joint of the Shoulder.

Beſides the Branches of the Subclavian Artery mentioned above, others are frequently found which are more variable in their Origin, and in their Diſtribution in the Neck.

AXILLARY ARTERY.

The AXILLARY ARTERY, lying in the Axilla, between the Subſcapularis and Serratus Major, is ſurrounded by the Lymphatic Glands and Fat, by the Veins, and alſo by the large Nerves which form the Brachial Plexus. It gives ſome ſmall Branches to the adjacent Muſcles and Nerves;—but its principal Branches are,

The THORACICÆ, or MAMMARIÆ EXTERNÆ,—three or four in number,—which by ſome Authors are deſcribed by particular names; as,

The *Thoracica Superior*, which ariſes oppoſite the Firſt or Second Rib, gives Branches to the Serratus, and Intercoſtal Muſcles, and to the Pectorales and Skin:

The *Thoracica Longa*, which ſends Twigs to the Axillary Glands; but goes chiefly to the Serratus, Pectoralis, Mamma, and Integuments, and inoſculates with Branches of the Thoracica Superior:

The *Thoracica Humeralis*, or *Acromialis*, which goes off oppoſite the Thoracica Superior, and divides ſuddenly into Branches which run to the upper parts of the Thorax near it, and to the Integuments, Muſcles, and Ligaments, ſurrounding the Articulation; inoſculating with Branches of the Scapulary Arteries:

The *Thoracica Axillaris*, or *Alaris*, which, when preſent, goes off from or near to the Thoracica Humeralis, and is beſtowed upon the Axillary Glands, Fat, &c. frequently diſperſing Branches upon the under edge of the Subſcapularis Muſcle, and upon the Pectoralis and Serratus:

The SCAPULARIS INTERNA, or SUBSCAPULARIS, which ariſes at the under edge of the Subſcapularis Muſcle, and ſoon divides into the *Proper Scapularis Interna* and the *Dorſalis Scapulæ Inferior*.

The SCAPULARIS INTERNA runs near the inferior edge of the Scapula, and ſends off many large Branches, the principal part of which are diſperſed upon the Latiſſimus Dorſi, Teres Major, and Subſcapularis Muſcles. It ſends Branches alſo to the Muſcles ariſing from the Coracoid Proceſs, to the Capſular Ligament, and to the Axillary Glands, which have large Anaſtomoſes with each other, and with the Superior Dorſal Artery of the Scapula.

The DORSALIS SCAPULÆ INFERIOR, immediately after leaving the Internal Scapulary Artery, turns round near the Cervix of the Scapula, between the Inferior Coſta of the Bone and Teres Major, to the Foſſa Infra-ſpinata.

Upon the Poſterior Surface of the Scapula, it ſpreads out into Branches of conſiderable ſize, which are diſperſed upon the Muſcles covering the under and back part of the Bone, and extend alſo to the Capſular Ligament; while the Trunk, aſcending, inoſculates with that of the Superior Dorſal Artery of the Scapula, whereby an Arch common to the two Arteries is formed at the root of the Acromion.

The CIRCUMFLEXA, or ARTICULARIS ANTERIOR, which is ſent off between the Subſcapularis and Teres Major. It paſſes in a tranſverſe direction between the Heads of the Coraco-brachialis and Biceps Muſcles, and Body of the Os Humeri, immediately below the Joint of the Humerus. It is diſperſed upon the Muſcles which cover it, and upon the Perioſteum and Capſular Ligament of the Joint.

The CIRCUMFLEXA, or ARTICULARIS POSTERIOR, which ariſes directly oppoſite to the former, or by a common root with it, and is by much the larger of the two.

It paſſes firſt between the Subſcapularis Muſcle and Teres Major, and then turns round between the back-part of the Os Humeri, and Long Head of the Triceps, and the Deltoid Muſcle. It ſends Branches to the Perioſteum and Joint, to the Short Head of the Biceps and Coraco-brachialis, to the Triceps and Subſcapularis, and runs in a circular manner to the Deltoid Muſcle.—Its extreme Branches anaſtomoſe with thoſe of the Anterior Circumflex Artery, ſo as completely to encompaſs the Body of the Bone.

After giving off theſe different Branches, the Axillary Artery emerges from behind the edge of the great Pectoral Muſcle, and runs along the Os Humeri, where it is termed *Humeral* or *Brachial Artery*.

HUMERAL ARTERY.

The HUMERAL ARTERY deſcends behind the inner edge of the Biceps Muſcle, covered by the Tendinous Aponeuroſis of the Arm, and having the Triceps Extenſor Cubiti behind. In this courſe, it beſtows Branches to the Muſcles and Integuments, and to the Perioſteum and Bone, viz.

A *Branch* under the Coraco-brachialis to the Capſule of the Joint and parts adjacent to it.

Branches to the Triceps and Coraco-brachialis.

Various Branches to the Biceps, Brachialis Internus, and Bone.

The Profunda Humeri, or Spiralis, which ariſes near the upper part of the Arm, at the inſertion of the Latiſſimus Dorſi and Teres Major Muſcles, taking a Spiral direction downwards and outwards, between the Triceps Muſcle and Bone, and terminating at the outer Condyle of the Os Humeri, by a *Large communicating Radial*, or *Profundo-radial* Branch.

The Arteria Profunda ſends Branches upwards, which inoſculate with others from the Humeral and Scapulary Arteries. The principal Branches run to the Coraco-brachialis and Triceps Muſcles, and to the Muſcles at the outer part of the Elbow;—and one of them, termed *Large Communicating Ulnar*, or *Profundo-radial*, deſcending at the inner ſide of the Arm, is ſometimes ſo conſiderable as to form—

The Profunda Inferior, or Minor. This Artery is frequently a Branch of the Profunda Superior, but more commonly an original Branch ſent off from the Trunk of the Artery, near the middle of the Arm.

It gives Branches to the Muſcles and other parts at the inſide of the Arm, and terminates about the inner part of the Os Humeri.

The Ramus Anastomoticus Magnus, which comes off a little above the Elbow, and beſtows Branches to the Brachialis Internus, to the under end of the Triceps, and to the Muſcles, Ligaments, and Parts in general about the Elbow-Joint.

Beſides theſe, there are ſeveral other Branches ſent in ſucceſſion from the Trunk of the Humeral Artery into the Muſcles and other parts adjacent, which are ſhorter than the reſt, and run more in a tranſverſe direction, eſpecially thoſe to the Biceps Muſcle.—One ſmall Branch, termed *Nutritia*, or *Medullaris*, goes into the ſubſtance of the Bone by the Paſſage near its middle, and ſupplies the Marrow, and parts which contain it.

The Trunk of the Humeral Artery having ſent off the different Branches which belong to the Arm, paſſes to the middle of the Bending of the Elbow, between the Aponeuroſis and Round Tendon of the Biceps Muſcle.

About an inch below the Elbow, it commonly divides into two principal Arteries, the *Radial* and *Ulnar*. It happens, however, now and then, that this Diviſion takes place about the middle of the Arm ; and in certain inſtances as high as the Axilla.

The RADIALIS paſſes over the Pronator Teres Muſcle, and follows the courſe of the Radius through the whole length of that Bone. It deſcends between the Supinator Longus and Flexor Radialis, reſting on the Flexor Longus Pollicis.

At the upper part of the Fore-arm, it is covered by the Supinator Longus : In its deſcent, it becomes more ſuperficial, and, at the under part of the Fore-arm, it lies cloſe upon the Radius, and immediately under the Skin, in conſequence of which, the Pulſe is commonly felt in this place. Its principal Branches are,

The *Recurrens Radialis*, which is reflected to the Muſcles and Parts of the Joint near it, and anaſtomoſes freely with the Profundo-radial, and Profundo-minor of the Humeral Artery, at the outer part of the Elbow.

Numerous *Lateral Branches*, in the deſcent of the Artery, to the Muſcles and Integuments, and parts in general ſituated about the Radius.

The *Superficialis Volæ*, which goes off at the Wriſt, and paſſes over or through the Abductor Pollicis to the Palm. It is ſometimes ſo ſmall as ſcarcely to reach the Palm. More frequently it is a conſiderable Artery, ſending Branches to the Ball of the Thumb and ſuperficial parts of the Palm near it,—a Branch along the outer ſide of the Thumb,—and an Anaſtomoſing Branch, which unites with the Arch of the Ulnar Artery.

Small Branches to the Ligaments, Bones, and other parts about the Wriſt.

One, or ſometimes two Branches, termed *Dorſal*, to the back-part of the Metacarpus and Fingers.

At the under end of the Fore-arm, the Radial Artery turns back under the Tendons of the Extenſors of the Thumb;—then getting between the roots of the Metacarpal Bones of the Thumb and Fore-finger, and, perforating the Abductor Indicis, it divides into Three principal Branches, viz.

The *Arteria Magna Pollicis*, which runs along the ſide of the Thumb next the Fingers, and ſometimes divides at its root, into two Branches, which ſupply both ſides of it.

The *Radialis Indicis*, which runs along the ſide of the Fore-finger next the Thumb.

The *Palmaris Profunda*, which croſſes the Hand between the roots of the Metacarpal Bones and Flexors of the Fingers, and forms an *Arcus Profundus*, from which

Branches go off to the Intеroſſei Muſcles and other deep parts of the Palm.

The ULNARIS, ſomewhat larger than the Radialis, appears at firſt as the continuation of the Trunk of the Humeral Artery.

At its upper part, it ſinks deep behind the Flexor Muſcles of the Hand, and paſſes afterwards, for ſome way, between the Flexor Sublimis and Profundus Digitorum.

Near the Wriſt, it becomes more ſuperficial, and runs between the Tendons of the Flexor Carpi Ulnaris and Flexor Digitorum Profundus, to the Hand.

In this courſe, it ſends off many Branches to the Fore-arm, among which the following are the moſt conſiderable.

The *Recurrens Ulnaris*, which runs deep among the Flexor Muſcles, and ſoon divides into Branches which aſcend and ſupply the Parts about the poſterior and inner ſide of the Elbow and Capſule of the Joint.—In the Groove behind the inner Condyle of the Os Humeri, it communicates by diſtinct Anaſtomoſes with the Profunda Inferior, or with the Ramus Anaſtomoticus, ſent down from the Humeral Artery.

The *Interoſſea Poſterior*, which comes off at the upper end of the Interoſſeous Ligament, perforating it immediately at its Origin, and going to the back-part of the Fore-arm.

From this place, it ſends upwards a *Recurrent Branch*, which communicates, upon the back-part of the Elbow, with the other Recurrent Arteries, and with the Branches ſent down from the Humeral Artery, and forms along with theſe a Plexus of Veſſels upon the back-part of the Joint.

The Interoſſea is afterwards continued downwards, and is chiefly diſperſed upon the Bellies of the External Muſcles of the Hand and Fingers, being commonly exhauſted before it reach the Wriſt.

The *Interoſſea Anterior,* which comes off ſometimes immediately below the former, and at other times in common with it. It is conſiderably the larger of the two; but only about half the ſize of the Ulnar Artery from which it ſprings.

It runs cloſe upon the Interoſſeous Ligament, and furniſhes Branches to the Muſcles and deep Parts upon the anterior ſide of the Fore-arm, and the Nutritious Arteries of the Radius and Ulna.

Near the Wriſt, the principal part of the Artery perforates the Ligament, and goes to the poſterior ſide of the Carpus and back of the Hand, dividing into Branches which inoſculate with others of the Poſterior Interoſſeous and Radial Arteries. The other part of the Artery is ſpent about the Ligaments on the fore-ſide of the Wriſt.

The Ulnary Artery, having given off its Recurrent Branch, and the Arteriæ Interoſſeæ, with many Lateral Branches to the inner ſide of the Fore-arm, paſſes by the ſide of the Os Piſiforme, and then over the Annular Ligament into the Palm, where it forms the *Arcus Volaris Superficialis.*

At the under end of the Fore-arm, it ſends off a *Dorſal Branch,* which paſſes behind the Tendon of the Flexor Carpi Ulnaris to the back of the Hand, where, joining with Branches of the Anterior Interoſſeous and Radial Arteries, it aſſiſts in forming a Plexus, which ſupplies the back-parts of the Wriſt, Hand, and Fingers with a number of Branches, which are ſmall when compared with thoſe in the Palm.

The *Arcus Volaris Sublimis*, or *Superficialis*, is placed with its convex ſide downwards, and extends obliquely from the root of the Metacarpal Bone of the Little Finger towards that of the Firſt Bone of the Thumb, being covered by the Expanſion termed *Aponeuroſis Palmaris*.

From the Arcus Volaris, Branches are ſent off in the following order, viz.

Several *Small Branches* to the Integuments and other Superficial parts of the Palm:

A conſiderable Branch, termed *Ulnaris Profunda* of the Palm, which ſinks near the root of the Metacarpal Bone of the Little Finger, and, inoſculating with the Palmar Branch of the Radial Artery, aſſiſts in forming the Arcus Profundus:

A *Branch* to the inner ſide of the Little Finger:

Three large Digital Branches which run oppoſite to the Interſtices of the Metacarpal Bones, to the Roots of, or Clefts between the Fingers.

At theſe Clefts, each of the Three Digital Arteries is divided into two Branches, one of which Branches of each Diviſion runs along the Anterior Radial margin of one Finger, and the other along the Anterior Ulnar margin of the Finger next it;—the Three Digital Arteries thus ſupplying the margins of all the Fingers, excepting the inner margin of the Little Finger, and the outer margin of the Index

At the roots of the Fingers, each of the Digital Arteries receives a ſmall Branch from the Arcus Profundus.

At the Roots and Joints, but more particularly at the Points of the Fingers, the Arteries communicate by croſs Arches, and ſend Branches to the parts adjacent.

The Superficial Arch of the Palm commonly ſends off one of the Arteries of the Thumb, and ultimately communicates by a large Anaſtomoſes with the Root of the Arteria Magna Pollicis.

VEINS OF THE SUPERIOR EXTREMITY AND OF PART OF THE NECK.

THE Veins of the Superior Extremities have numerous *Valves*, and are divided into a *Superficial* and a *Deep Set*; the former lying immediately under the Integuments, the latter accompanying the Arteries, and taking their names from them.

The Subcutaneous Veins have many large Anaſtomoſes with each other, particularly on the Fore-arm, where they unite, ſeparate, and re-unite ſeveral times, thus forming a Plexus by which it is ſurrounded.

The Superficial Veins from the back of the Hand, (one of which, belonging to the Little Finger, was termed *Salvatella* by the Ancients), go chiefly to the *Superficial Radial*, and partly alſo to the *Ulnar Veins*.

The Superficial Radial Veins form the *Vena Cephalica*, and the Superficial Ulnar Veins the *Vena Baſilica*, at the Joint of the Elbow.

The Superficial Veins on the anterior part of the Fore-arm communicate laterally with the Radial and Ulnar Veins, and, in their aſcent, form a Trunk termed *Mediana Longa.*

The Mediana Longa, a little below the Bending of the Elbow, is divided into *Mediana Cephalica* and *Mediana Baſilica*, which, running obliquely upwards, terminate a little above the Elbow, the former in the Cephalic, and the latter, croſſing over the Humeral Artery, in the Baſilic Vein.

Though this deſcription correſponds with the general diſtribution of the Veins of the Fore-arm; yet, ſo great is the Variety among them, that they are ſcarcely found to agree exactly in any two Subjects.

The Basilica, in its aſcent, forms the principal Humeral Vein, which paſſes along the ſide of the Os Humeri, a little to the inſide of the Humeral Artery; and, receiving Branches from the correſponding ſide of the Arm, it runs into the Arm-pit, and forms the Vena Axillaris.

The Cephalica aſcends at the outſide of the Biceps Muſcle, receives Branches from the adjacent parts of the Arm, and communicates in ſeveral places with the Baſilic; and, paſſing in the Groove between the Large Pectoral and the Deltoid Muſcle, terminates in the Axillary Vein.

The *Deep Veins*, termed alſo *Venæ Satellites*, or *Concomites*, run cloſe by the ſide of their reſpective Arteries, one lying commonly on each ſide of the Artery, and receiving the Blood from the adjacent parts.

In various places they anaſtomoſe with each other by ſhort Branches, which croſs over the Arteries.

Near the Joint of the Elbow, the *Deep Radial*, *Ulnar*, and *Interoſſeous Veins*, form a Plexus over the Bifurcation of the Humeral Artery.

From this Plexus, a ſhort but large Branch paſſes outwards, and forms a Communication with one of the Subcutaneous Veins, and, in general, the Communication is with one of the Median Veins.

The Vena Axillaris, formed by the Trunks of the Superficial and Deep Humeral Veins, receives the *Veins* correſponding with the *Circumflex Arteries*, and the *Internal*, and the *Inferior Dorſal Veins* of the *Scapula*.

A little higher, it is joined by the *Venæ Thoracicæ Externæ*, and about this place changes its name for that of *Subclavian* Vein.

The VENA SUBCLAVIA paſſes between the Clavicle and firſt Rib, at the inner ſide of the Trunk of the Artery, and afterwards goes over the fore-part of the Anterior Scalenus Muſcle, at the under end of the Neck.

After croſſing the firſt Rib, it receives the *Vein* correſponding with the Superior Dorſal Artery of the Scapula, other *Veins* which belong to the Cervical Arteries, and alſo *ſmall Veins* from the Skin and Muſcles on the back-part of the Neck.

While ſituated in the Neck, it likewiſe receives the *External*, and then the *Internal Jugular Veins*; and near this laſt, a *Vein* of conſiderable ſize, which correſponds with the Trunk of the Vertebral Artery.

The *Vertebral Vein* communicates within the Cranium, by ſmall Branches, with the Inferior Petroſal Sinuſes, or with the Occipital Sinuſes; but is chiefly formed by Branches ariſing from the Spinal Marrow and its Membranes, and from the Bones and deep-ſeated Muſcles of the Neck.

Behind the top of the Sternum, the Subclavian Vein frequently receives the *Inferior Laryngeal Vein*, the *Anterior External Jugular*, and the *Internal Mammary Vein.*— Beſides theſe, the *Left* Subclavian receives alſo the *Left Superior Intercoſtal Vein;* after which, it goes acroſs the Root of the Great Arteries ſent up from the Arch of the Aorta, and joins its Fellow of the oppoſite ſide, to form the Superior Cava.

BLOOD-VESSELS WITHIN THE THORAX.

OF the Blood-veſſels within the Thorax, the *Pulmonary Arteries* and *Veins*, the *Aorta*, the *Coronary Veſſels*, and the other Veſſels connected with the Heart, have been already taken notice of.

The following are thoſe which remain to be deſcribed.

ARTERIES.

The MAMMARIA INTERNA, which ariſes from the Subclavian, oppoſite to the Inferior Laryngeal, and deſcends between the Pleura and Cartilages of the True Ribs, and between the Internal Intercoſtal and Sterno-coſtal Muſcles, at the edge of the Sternum;—ſending off

A *Small Reflected Branch* to the Integuments and Muſcles adjacent to the Clavicle:

One or two ſmall Branches, termed *Thymicæ*, to the Thymus Gland, and which, like the Gland itſelf, are moſt conſiderable in the Young Subject:

A minute Branch, termed *Comes Nervi Phrenici*, which accompanies the Phrenic Nerve, and, after giving Twigs to the neighbouring Membranes, is diſtributed upon the Diaphragm:

Some ſmall Branches, called *Mediaſtinæ*, and *Pericardiacæ*, to the Mediaſtinum and Pericardium:

Several Branches, outwards, to the Intercoſtal Muſcles, and others between the Cartilages of the True Ribs at the edge of the Sternum, to the Pectoral Muſcles, Mamma and Integuments, which communicate with thoſe of the Thoracicæ Externæ:

A *Large Branch*, at the under end of the Thorax, termed *Muſculo-phrenica*, which is diſperſed upon the Diaphragm.

The Mammary Artery afterwards emerges from the Thorax, commonly under the Cartilage of the Seventh True Rib, and forms an *Epigaſtric Branch* which runs upon the back-part of the Rectus Abdominis Muſcle, upon the upper end of which it is diſperſed, after ſending a Branch to the Oblique Muſcles of the Abdomen.

The Arteriæ Bronchiales, which come off from the fore-part of the deſcending Aorta, and are diſtributed to the Lungs. They conſiſt of,

The Bronchialis Dextra, which ariſes ſometimes from the Aorta, more frequently, however, from the uppermoſt Aortic Intercoſtal, and runs to the correſponding Lungs.

The Bronchialis Communis, which is only ſometimes preſent. It ariſes from the upper and fore part of the deſcending Aorta, divides into two Branches, one to the Left ſide of the Lungs, the other to the Right ſide, and alſo to the Œſophagus.

The BRONCHIALES SINISTRÆ, Superior and Inferior, which are of unequal ſize, from the fore-part of the Aorta, at a little diſtance from each other; the Inferior occaſionally coming off from thoſe of the Œſophageals.

The Bronchial Arteries ſend ſmall Branches to the Œſophagus, to the poſterior Mediaſtinum and Pericardium, and afterwards accompany the Branches of the Trachea through the ſubſtance of the Lungs, where they communicate by minute Branches with the Pulmonary Artery.

The ARTERIÆ ŒSOPHAGEÆ, which are minute Branches, ariſing from the different parts of the Aorta, or from the Bronchials, and diſperſed upon the Œſophagus, alſo ſending Twigs to the Poſterior Mediaſtinum and Pericardium.

The INTERCOSTALIS SUPERIOR, which comes off from the Subclavian, a little farther out than the Mammary, and, after ſending a Branch upwards to the Deep Muſcles and Nerves, at the under and fore-part of the Neck, it deſcends near the Spine, and divides into two or three Branches, which ſupply an equal number of Intercoſtal Spaces.

The INTERCOSTALES INFERIORES, which are nine or ten Pairs in number, ariſing from the back-part of the Aorta, and running in the Grooves at the under edges of the Ribs, between the External and Internal Intercoſtal Muſcles.

They furniſh Branches to the Spine, to the Spinal Marrow and its Membranes, to the Intercoſtal Muſcles, Pleura, &c. alſo numerous Branches to the Muſcles on the outſide of the Thorax, and communicate with thoſe of the Internal and External Mammary Arteries.

The firſt of the Aortic Intercoſtals inoſculates with the Superior Intercoſtal of the Subclavian;—the laſt paſſing behind the Crus of the Diaphragm, goes over the Quadratus Lumborum, and follows the margin of the twelfth Rib, to be diſtributed upon the Tendon of the Tranſverſalis Abdominis.

The PERICARDIACA SUPERIOR and POSTERIOR, a ſmall Branch ariſing ſometimes from the concave ſide of the Arch of the Aorta, although more frequently from the Subclavian or Internal Mammary, and ſending Twigs to the Pericardium and adjoining parts of the Lungs and Œſophagus.

VEINS.

The Blood ſent to the Thorax by the Arteriæ Mammariæ Internæ, Bronchiales, Œſophageæ, and Intercoſtales, is returned to the Heart by the following Veins, viz.

The MAMMARIÆ INTERNÆ, which accompany their correſponding Arteries, and terminate, the Left in the Subclavian, and the Right in this, or in the top of the Vena Cava.

Some ſmall Veins, as the *Pericardiaco-Diaphragmatic*, the *Thymic* and *Pericardiac*, which, in place of joining the Mammary Trunk, commonly terminate, the Right in the

Subclavian, or top of the Cava, and the Left in the correſponding Subclavian Vein.

The VENÆ INTERCOSTALES, which are the ſame in number with their Arteries, and accompany them along the edges of the Ribs.

Several of the Lower Left Intercoſtals unite into a Trunk, termed *Vena Azygos*, which croſſes over the Spine, about the middle of the Thorax,—behind, but ſometimes before the Trunk of the Aorta,—to the right ſide.

The VENA AZYGOS, or *Vena ſine Pari*, thus originally formed by the Lower Left Intercoſtals, aſcends on the forepart of the Spine over the Intercoſtal Arteries, at the right ſide of the Aorta.

At its lower extremity, it generally communicates with one of the Lumbar Veins, or with the Vena Renalis; and not unfrequently with the Trunk of the Inferior Cava.

Upon the Spine, it receives the *Right Intercoſtals* and the *Right Bronchial Vein*; and turning forwards over the Root of the Great Pulmonary Veſſels of that ſide, it terminates in the Superior Cava.

The UPPER LEFT INTERCOSTAL VEINS, or ſuch as are not received by the Vena Azygos, terminate in a Trunk on the left ſide, improperly called *Left Vena Azygos*.

The LEFT VENA AZYGOS, LEFT BRONCHIAL, or LEFT SUPERIOR INTERCOSTAL VEIN, beſides the Superior Intercoſtal Branches, receives the Left Bronchial Veins and Branches from the Œſophagus and other parts near it, and terminates in the Subclavian Vein.

The VENA CAVA SUPERIOR,—formed by the union of the Subclavian Veins, with the addition of the Vena Azygos,—paſſes down at the right ſide of the aſcending Aorta, perforates the Pericardium, and terminates in the upper part of the Right Auricle.

BLOOD-VESSELS *of the* DIAPHRAGM.

The Diaphragm is ſupplied with *Arteries* from various ſources, viz. thoſe entering its upper part from the Internal Mammary, already deſcribed; alſo ſmall Branches from the Intercoſtal and Lumbar Arteries. Its principal Branches, however, are the *Phrenic*, or *Diaphragmatic*.

The ARTERIÆ DIAPHRAGMATICÆ, are two in number, one on each ſide, which ariſe from the fore-part of the Aorta as ſoon as it enters the Abdomen.

In general, their origin is diſtinct from each other, but ſometimes by a common Trunk; and now and then, one or both originate from the root of the Cœliaca.

They afterwards go obliquely upwards and outwards over the Crura of the Diaphragm, ſpread out into many Branches, which are chiefly diſperſed upon its Fleſhy ſides, and inoſculate with thoſe which enter at its upper ſurface.

They likewiſe give ſmall Branches to the Glandulæ Renales, to the Cardia, and parts in general which lie near them.

The VENÆ DIAPHRAGMATICÆ, like their correſponding

Arteries, run upon the under part of the Diaphragm, and terminate in the Inferior Cava, behind the Liver,—the right being commonly a little lower than the left.

BLOOD-VESSELS OF THE CHYLOPOIETIC, AND ASSISTANT CHYLOPOIETIC VISCERA.

ARTERIES.

THE Arteries of theſe Viſcera, conſiſt of the *Cœliac*, and the *Superior* and *Inferior Meſenterics*; all of which are *Azygous* or ſingle Arteries ariſing from the fore-part of the Aorta.

ARTERIA CŒLIACA.

The *Arteria Cœliaca*, ariſes from the Aorta, immediately after it emerges from between the Crura of the Diaphragm into the Abdomen, or nearly oppoſite the eleventh Dorſal Vertebra; and is ſituated at the upper edge of the Pancreas.

The Trunk of the Cœliac Artery is remarkably ſhort, being little more than half an inch in length, before it divides into its Three principal Branches, called, from their deſtination, *Superior Gaſtric*, *Hepatic*, and *Splenic*.

The GASTRICA SUPERIOR, or CORONARIA VENTRI-

CULI SUPERIOR, is the ſmalleſt of the three. It goes upwards, and a little towards the left, to reach the right ſide of the upper Orifice of the Stomach.

Here it ſends Branches to the Cardia, which encircle it, and, aſcending ſome way upon the Œſophagus, communicate with the Arteriæ Œſophageæ.

The Trunk of the Artery afterwards divides, upon the ſmall Curvature of the Stomach, into principal Branches, ſome of which run acroſs the upper and under Surfaces, and others obliquely towards the right ſide; ſupplying a large portion of the Stomach, and ſending Twigs to the Omentum Minus,—while the Trunk is frequently extended as far as the Pylorus.

The ARTERIA HEPATICA, the largeſt of the three Great Branches is concealed at its root by the Pancreas, paſſes. It paſſes obliquely forwards, upwards, and to the right ſide, behind the Pylorus,—before and a little to the right ſide of the *Lobulus* SPIGELII,—till it arrives at the Cavity of the Liver called *Porta.*

Where it approaches the Porta, it divides into the *Gaſtrica Inferior Dextra*, and the *Proper Hepatic Artery.*

The GASTRICA DEXTRA, or GASTRICA INFERIOR DEXTRA, or GASTRO-EPIPLOICA DEXTRA, ſends out—

The *Arteria Pylorica*, which, however, is frequently produced immediately from the Hepatic Artery. It gives Branches to the Pylorus and other parts about the ſmall end of the Stomach, and afterwards runs ſome way along its ſmall Curvature, inoſculating with the Superior Gaſtric Artery.

Beſides this principal Branch, there are a few ſmaller ones ſent from the Gaſtrica Inferior to the Pylorus.

The *Duodenalis*, which is diſperſed upon the beginning and right portion of the Duodenum, along with other Branches coming from the ſame ſource, but of inferior ſize.

Rami Pancreatici, diſtributed to the right end of the Pancreas.

After furniſhing the Branches already mentioned, the Inferior Gaſtric Artery paſſes under the Pylorus to the great Curvature of the Stomach, along which it runs; being included, to near its large extremity, in the Layers of the Anterior Portion of the Omentum.

In this courſe, it ſends off—

The *Rami Epiploici*, which are long and ſlender Branches diſperſed upon the Epiploon or Omentum.

The *Rami Gaſtrici*, which, plunging ſuddenly into both ſides of the Stomach, communicate with the Pyloric and Superior Gaſtric Arteries.

The Hepatic Artery, having given out the Inferior Gaſtric, and frequently the Pyloric Artery, ſoon divides into two principal Branches, a right and left, of unequal ſize, which run into the Porta;—the one,—under the Hepatic Duct,—to ſupply the great,—and the other the ſmall Lobe of the Liver.

From the Right Branch, before it plunges into the Liver, is ſent off the *Arteria Cyſtica*, afterwards dividing into two ſmaller Branches, termed *Gemellæ*, which are diſperſed upon the Gall-bladder.

Frequently, beſides the Hepatic Artery ſent off from the

Cœliac, there is another, coming ſometimes from the Superior Gaſtric, at other times from the Superior Meſenteric Artery, to be ſent into the Liver. In ſuch caſes, the Trunk which gives origin to this additional Artery is greater than uſual, and the Hepatic Branch which it accompanies is proportionally ſmaller.

The ARTERIA SPLENICA, nearly equal in ſize to the Trunk of the Hepatica, takes a long and ſerpentine courſe acroſs the left ſide of the Body; running firſt behind, then at the upper part of the Pancreas in its way to the Spleen. Its Branches are,—

The *Rami Pancreatici*, which are few in number and ſmall. They run from the Splenic Artery nearly at right angles, and ſupply the greater part of the Pancreas.

The *Gaſtrica Siniſtra*, *Gaſtrica Inferior Siniſtra*, or *Gaſtro-Epiploica Siniſtra*, which is conſiderably inferior in length and ſize to the Gaſtrica Dextra. It communicates by its Branches with the Gaſtrica Superior, and Inferior, while its Trunk runs a little way towards the right ſide along the great Curvature of the Stomach.

It ſends ſome *Rami Pancreatici* and *Gaſtro-Epiploici*, and *Meſo-colici Siniſtri*, to the Pancreas, left portions of the Omentum and Meſo-colon; while its Trunk frequently forms a common Arch with the Gaſtrica Dextra.

Three or four conſiderable Branches, termed *Vaſa Brevia*, or *Arteriæ Breves*, which run to the left part of the great Curvature of the Stomach, to be diſtributed upon its large extremity; their Ramifications anaſtomoſing with thoſe of the Superior and of the Left Inferior Gaſtric Arteries.

The

The *Rami Splenici*, which are alſo contorted, are ſeveral in number and of conſiderable ſize. They go at the concave ſide of the Spleen, to be diſtributed throughout the whole of its ſubſtance.

MESENTERICA SUPERIOR.

The MESENTERICA SUPERIOR ariſes from the Aorta, immediately below the Cœliac Artery, which it equals in ſize; and, running under the Pancreas, and then over the Duodenum, it paſſes between the Layers of the Meſentery, towards the under ſide of the Abdomen.

In its deſcent, it is bent a little to the left ſide, its lower extremity turning towards the beginning of the Colon.

From the convex ſide of the Artery, many large Branches are ſent off to the ſmall Inteſtines; while others proceed from the right ſide to the right portion of the Colon.

The *Firſt Arteries* ſent off from the Trunk are very inconſiderable, running to the Pancreas and to the left portion of the Duodenum, and communicating there with Branches of the Cœliac Artery.

The principal Branches from the left ſide of the Trunk are diſperſed upon the Jejunum and Ilium, ſupplying, in their courſe, the Layers of the Meſentery with the parts it contains.

The firſt of theſe Branches are ſhort and ſmall, thoſe which ſucceed gradually increaſe in length and ſize to the middle of the Arch, after which they diminiſh again ſomewhat in the ſame proportion towards the lower part of the Ilium.

In their courſe through the Meſentery, the principal Branches communicate, firſt by reciprocal Arches, then by Areolæ of different figures, which increaſe in number, but diminiſh in ſize as they approach the Inteſtines.

From theſe Areolæ, many Branches are detached, which take a ſtraight courſe to the Inteſtines, and are afterwards ramified through their ſubſtance, forming numberleſs Anaſtomoſes with each other.

The Branches produced from the right or concave ſide of the Trunk are ſituated between the Layers of the Meſocolon,—their length being almoſt equal to the breadth of that Membrane.

Near the Inteſtines, they communicate by large and then by ſmaller Arches: Theſe laſt, however, are leſs frequent than thoſe which belong to the ſmall Inteſtines.

The principal Branches are the following:—

The *Ileo-colica*, which ariſes near the under part of the Trunk, ſupplies the end of the Ilium and beginning of the Colon, and communicates with the Branches ſent from the extremity of the Trunk of the Artery.

A Short Trunk, which divides into—

The *Colica Dextra*, for ſupplying the right ſide of the Colon,—its Branches communicating with thoſe of the Ileo-colica: And—

The *Colica-Media*, or *Media Anaſtomotica*, which proceeds to the great Arch of the Colon.

Near the Colon, the Colica Media divides into two large Branches; one forming an Arch with the Dextra, the other with a Branch of the Meſenterica Inferior.

From the oppoſite ſide of the Colon, Branches of this Artery run to the Omentum, and communicate with the Gaſtro-Epiploic Arteries.

Beſides the Colic Branches already deſcribed, there is frequently an additional one, which ariſes from the beginning of the Superior Meſenteric Artery, and in its aſcent ſplits into two others, one of which, uniting with the Colica Media, forms the large Meſo-colic Arch, and the other a ſimilar Arch with the aſcending Branch of the Inferior Meſenteric Artery.

Mesenterica Inferior.

The Mesentrica Inferior ariſes from the Anterior and left ſide of the Aorta, ſomewhat lower than half-way between the Superior Meſenteric and the Bifurcation of the Aorta.

It deſcends obliquely behind the Peritonœum upon the left Pſoas Muſcle, and ſoon divides into principal Branches.

Theſe near the Inteſtine join with each other, and form Arches, from which others go off compoſing Areolæ in ſome meaſure ſimilar to thoſe which belong to the right ſide of the Colon.—The principal Branches are :—

The *Ramus Aſcendens*, which divides near the Inteſtine, into two Branches ; one of which joins the Colica Media, to form the great Meſocolic Arch, the other is reflected upon the left portion of the Colon.

The *Colica Siniſtra*, which is frequently double from its origin, or at other times ſplitting into two Branches, one

joi..ing

joining the Ramus Aſcendens, the other paſſing down by the Sigmoid Flexure of the Colon.

The *Hemorrhoidalis Interna*, which is of great ſize, being the Trunk continued. It anaſtomoſes with the Colica Siniſtra, and afterwards deſcends upon the back-part of the Rectum to its under extremity.

VEINS.

The VEINS which return the Blood from the Chylopoietic and Aſſiſtant Chylopoietic Viſcera, accompany their reſpective Arteries,—the Hepatic Branch excepted.—They have, like their Arteries, large and frequent Communications with each other, are much ſuperior in ſize, and, as well as the other Veins of the Viſcera ſituated in the great Cavities, are deſtitute of Valves.

The following are the Principal Trunks.

The MESENTERICA, or MESARAICA MINOR, or HÆMORRHOIDALIS INTERNA.

The MESENTERICA MINOR, running up at the left ſide of the Spine, receives—

The *Proper* VENA HÆMORRHOIDALIS INTERNA, which returns the Blood from the Inteſtinum Rectum;—the name obtained from the Vein being ſuppoſed to be connected with the Tumours called *Hæmorrhoids* or *Piles*.

The *Venæ Colicæ Siniſtræ*, which return the Blood from the left portion or ſide of the Colon.

A *Vena Duodenalis*, which returns the Blood from the left portion of the Duodenum.

The Meſenterica Minor commonly terminates in the

Vena Splenica, though not unfrequently in the Meſenterica Superior.

VENA SPLENICA.—The Vena Splenica, ſituated at the under ſide of its Artery and immediately behind the Pancreas, receives—

The *Rami Splenici*, which return the Blood from the Spleen.

The *Rami Pancreatici*, which paſs from the under ſide of the Pancreas:

The *Venæ Breves*, or *Vaſa Brevia*, which come from the left or great end of the Stomach:

The *Vena Gaſtrica Siniſtra*, or *Epiploica Siniſtra*, which comes from part of the great Arch of the Stomach, and correſponding portion of the Omentum:

The *Gaſtrica Superior*, which comes from the ſmall Curvature of the Stomach, and Omentum Minus, and goes into the Splenic near its termination, or into the beginning of the Vena Portæ.

The Splenic and Inferior Meſenteric Veins, after receiving their reſpective Branches, form a ſhort Trunk which joins the Superior Meſenteric.

VENA MESENTERICA SUPERIOR, or MAJOR. The Great Meſenteric Vein, ſituated at the under ſide of the Artery, receives—

The *Rami Meſenterici*, which are very large and numerous, returning the Blood from the Jejunum and Ilium,—the Branches going into the left ſide of the general Trunk.

The *Ileo-Colica*, which comes from the end of the Ilium and beginning of the Colon.

The *Colica Dextra*, which belongs to the right ſide of the Colon, and terminates in the right or concave ſide of the Meſenteric Trunk.

The *Colica Media Anaſtomotica*, which comes from the right portion of the great Arch of the Colon, forming, with the deſcending Branch of the Meſenterica Minor, a large Arch ſimilar to that of the correſponding Artery, and terminating alſo in the right ſide of the Trunk.

The *Gaſtro-epiploica Dextra*, which belongs to the right portions of the Stomach and Omentum, and frequently unites with the Veins from the ſide of the Colon, forming a ſhort common Trunk, which has the term of *Gaſtro-Colica* applied to it.

The *Pylorica* and *Duodenalis*, which ſometimes terminate in the Superior Meſenteric, at other times in the Gaſtrica Dextra.

The Great Meſenteric Vein, formed by the Branches mentioned above, paſſes over the beginning of the correſponding Artery, and joins the Vena Splenica.

The Trunk formed by theſe Veins, runs under the head of the Pancreas, and here obtains the name of *Vena Portæ*, or *Vena Portarum*.

VENA PORTÆ.

The VENA PORTÆ, formed by the two Meſenterics, and by the Splenic Vein, returns the Blood from the Stomach and Inteſtines, and from the Spleen, Pancreas, and Omenta.

The under part of the Vena Portæ is termed by ſome Authors *Vena Portæ Abdominalis*, or *Ventralis*; while the upper part,--being of great ſize, but without having any particular Dilatation in it,—is called *Sinus* of the Vena Portæ.

The Vena Portæ, at its beginning, frequently receives the Vena Gaſtrica Dextra, the Gaſtrica Superior, the Pylorica, and the Duodenalis, which at other times terminate in one of the great Trunks which form it.

It paſſes upwards, inclining a little to the right in its courſe to the Liver, having the Trunks of the Biliary Ducts before, and the Hepatic Artery on the left ſide of it,--and is about three or four inches in length.

When it reaches the Porta of the Liver, it receives the Venæ Cyſticæ into its Trunk, or into its right diviſion, either by two ſeparate Branches, or theſe united into a ſingle Vein.

In the Porta, it divides into two great Branches, a right and left, ſometimes termed *Venæ Portæ Hepaticæ*, which go off nearly at right angles, to be diſperſed, through the ſubſtance of the Liver, after the manner of an Artery, the ſubordinate Branches accompanying thoſe of the Arteria Hepatica.

From the extremities of the Vena Portarum, and likewiſe from the extremities of the Hepatic Artery, a ſet of Veins ariſe, termed *Venæ Hepaticæ*, and ſometimes *Venæ Cavæ Hepaticæ*, which accompany the Branches of the Hepatic Artery and Vena Portarum.

The Branches of the Venæ Hepaticæ afterwards unite into large Trunks, which recede from the Hepatic Artery and Vena Portæ, and terminate in the Inferior Cava.

Their termination in the Cava is by two, and frequently by three Trunks, at the place where it perforates the Diaphragm; but commonly, below this, a few ſmall Hepatic Branches go into the Cava where it is ſituated behind the Liver.

BLOOD-VESSELS OF THE ORGANS OF URINE AND GENERATION.

ARTERIA RENALIS.—The Arteria Renalis, called alſo *Arteria Emulgens*, ariſes from the ſide of the Aorta, a little below the root of the Superior Meſenteric Artery.

It commonly comes off by one large Trunk, though frequently by two, and ſometimes more, in which caſe each of theſe is ſmaller than when the Artery is ſingle.

It runs acroſs the Spine and Pſoas Muſcle, nearly in a tranſverſe direction, deſcending, however, a little in its courſe towards the Kidney. The Artery of the right ſide goes behind the Vena Cava, and is longer than the left, in conſequence of the Cava being ſituated between the Aorta and the Right Kidney.

At the concave edge of the Kidney, the Artery divides into three or four Branches, which ſometimes ſend Twigs to the Glandula Renalis and Tunica Adipoſa of the Kidney.

The Renal Branches then plunge into the ſubſtance of the Kidney, ſurround its Pelvis, and afterwards ramify chiefly in its Cortical Subſtance;—forming Arches with each other, but few in number, at the roots of the Papillæ.

The VENA RENALIS, or EMULGENS, terminates in the Inferior Cava; and is more ſuperficial than its correſponding Artery. It is the largeſt Vein received by the Cava from its origin to the part where it reaches the Liver.

The Left Renal Vein is longer than the Right, in conſequence of the Aorta lying between the Left Kidney and the Cava, is ſituated firſt behind, but is afterwards anterior to the correſponding Artery.

The Right Vein is ſhort, covers the Artery, and paſſes directly into the Cava.

ARTERIÆ CAPSULARES.—The Arteriæ Capſulares, or *Arteries of the Renal Capſules or Glands*, are ſmall but numerous.

They are derived from the Renal and Diaphragmatic Arteries; and, in general, the Renal Gland, eſpecially the Left, receives additional Branches from the Trunk of the Aorta.

The VENÆ CAPSULARES commonly unite into a large Trunk, which, in the left ſide, terminates in that of the Kidney, while in the right it frequently goes into the Cava.

ARTERIÆ ADIPOSÆ.—The Arteries which ſupply the Tunica Adipoſa of the Kidney are numerous Twigs proceeding from the Diaphragmatic, Capſular, and Renal Arteries, or from others near it.

The *Veins* which return from the extremities of theſe Arteries paſs into the Trunks adjacent.

ARTERIA SPERMATICA.—The Spermatic Artery, the diameter of which is ſmall when compared with its great length, ariſes oppoſite to its fellow, from the fore-part of the Aorta, a little below the Renal Arteries.

Sometimes it ariſes from the Arteria Renalis, at other times a little higher from the Aorta, and in rarer inſtances from the Diaphragmatic Artery.

It deſcends, in a waving direction, on the ſurface of the Pſoas Muſcle, behind the Peritonœum; the right paſſing obliquely over the Cava, the left behind the Colic Arteries of the ſame ſide, and both before the Ureters, to the under part of the Abdomen.

After this, it perforates the Ring of the Obliquus Externus, and runs in the Spermatic Cord, where it divides into Branches, which are diſperſed, ſome upon the Epididymis, while others larger, and much convoluted, run acroſs the Surface of the Teſticle, plunge into its Subſtance, and are diſtributed upon the Seminal Ducts.

In the deſcent of the Artery, it imparts *Twigs*—

To the Tunica Adipoſa of the Kidney:

To the Peritonœum and Cellular Subſtance near it;—and

To the Ureters,—which are alſo ſupplied with other Arteries from the adjacent Veſſels, viz. from the Renal and Capſular Arteries, from the Aorta, the Iliacæ and Veſicales.

The VENA SPERMATICA is much larger than its correſponding Artery, and is furniſhed with Valves within, but more particularly without the Abdomen.

It forms a Plexus which accompanies the Artery, and about the place where it recedes from it, which is nearly oppoſite the under end of the Kidney, it forms a ſingle Trunk, which in the right ſide goes into the Cava a little below the Emulgent Vein, and in the left into the correſponding Vena Renalis.

Beſides the Artery commonly termed *Spermatic*, the Teſticle generally receives a *Minute Branch*, which ariſes from the Hypogaſtric, and accompanies the Vas Deferens to the Body of the Teſticle upon which it is diſperſed,—communicating there with the Branches of the Spermatic Artery.

The *Vein* proper to this Artery, terminates in the Vena Hypogaſtrica.

The *Spermatic Artery*, in the Female, has the ſame kind of Origin, and the ſame courſe through the Abdomen, as in the Male, but is frequently more tortuous;—and, in place of perforating the Abdominal Ring, as it does in the latter, it deſcends into the Pelvis, between the Lamina of the Ligamentum Latum, to be diſperſed firſt upon the Ovarium and Uterine Tube, and then upon the Body of the Uterus itſelf,—paſſing in at its corner, and communicating with the Artery of the oppoſite ſide.

The Spermatic Vein has the ſame termination in the Female as in the Male,—but is conſiderably larger.

ARTERIÆ ILIACÆ.—The Iliac Arteries conſiſt of the *Two Common Iliacs*, which are formed by the Bifurcation of the Aorta; and of the *External* and *Internal Iliacs* of each ſide, which are formed by the Bifurcation of the Iliacæ Communes.

The *External Iliac* paſſes out of the Abdomen behind the *Ligament of* Poupart; the *Internal,* termed alſo *Arteria Hypogaſtrica,* deſcends obliquely into the Pelvis.

At the ſide of the Pelvis, the Internal divides into many Branches, ſome of which belong to the Organs of Urine and Generation, the reſt to other parts of the Pelvis and adjacent parts of the Thigh.

The following are the Branches ſent from the Hypogaſtric Artery to the Organs of Urine and Generation.

Arteria Umbilicalis.—The Arteria Umbilicalis appears in the Fœtus, as the continued Trunk of the Internal Iliac; but in the Adult, is ſhrivelled in the form of a Ligament, excepting at its beginning or under part.

The beginning of the Umbilical Artery gives off—

One or more *Arteriæ Veſicales,* which run to the under part of the Bladder, and extend along its ſides as far as the Fundus Veſicæ. At their origin, they furniſh Twigs to the Veſiculæ Seminales, Proſtate Gland, and Rectum.

In the Female, the Umbilical Artery ſends minute Branches to the Bladder, Uterus, Vagina, and Rectum.

Arteria Uterina.—The Arteria Uterina, termed alſo *Uterina Hypogaſtrica,* is much larger than the Spermatic Artery.

It ariſes from the Hypogaſtric, near the origin of the Pudic, Hæmorrhoidal, or Umbilical Arteries, and runs into the Uterus at its under extremity.

It is afterwards reflected upwards along the edge of the

Uterus, towards its Fundus or upper part, where it meets with the Spermatic Artery, with which it forms frequent Anaſtomoſes. It runs under the outer Coat of the Uterus, and ſends out many Serpentine Branches which plunge into its Subſtance, frequently communicating with the Artery of the oppoſite ſide.

The Uterine Artery ſends Branches downwards to be diſtributed extenſively upon the ſubſtance of the Vagina, and others forwards, to be diſperſed upon the Bladder.

ARTERIA VAGINALIS.—The Arteria Vaginalis is frequently awanting; in that caſe the Vagina is ſupplied by Branches from the adjacent Arteries.—When preſent, it ariſes from the Hypogaſtric, or from ſome of its Branches, —as that common to the Iſchiadic and Pudic,—or from the Hæmorrhoidalis Media; and is diſtributed upon the under part of the Vagina.

Beſides this, there are other Vaginal Branches from the neighbouring Arteries; as from the *Veſicales*, *Uterina*, and *Pudica*, which communicate with each other, and with the proper Vaginalis, upon the ſubſtance of the Vagina.

ARTERIA PUDICA, or PUDENDA COMMUNIS.—The Arteria Pudica, named from its belonging to the Parts of Generation in both ſexes, comes off either immediately from the Trunk of the Hypogaſtric, or from the Arteria Iſchiatica.

It paſſes out of the Pelvis, through the under part of the Notch of the Os Ilium, at the lower edge of the Pyriform Muſcle.

It then turns between the Sacro-ſciatic Ligaments, to get to the inner ſide of the Tuber Iſchii, where it is lodged deep in the Cellular Subſtance.

From the Tuber, it proceeds along the inner ſide of the Crus of the Os Iſchium and of the Os Pubis, and behind the Crus of the Penis, till it approaches the Symphyſis of the Pubis.

In its courſe, it ſends off many Branches, of which the following are the principal, viz.

Branches to the Veſiculæ Seminales, Proſtate Gland, Neck of the Bladder, and Rectum.

Branches to the Muſcles and parts adjacent to the Sacro-ſciatic Ligaments; ſome of them extending as far as the Joint of the Thigh-bone.

Branches to the Muſcles, Membranes, and Fat about the Tuber of the Os Iſchium.

The *Arteria Hæmorrhoidalis Externa*, which ſoon divides into Branches, to ſupply the Muſcles and Integuments about the Verge of the Anus.

The *Arteria Perinei*, which paſſes under the Tranſverſalis Perinei Muſcle, in the ſpace between the Crus of the Penis and Bulb of the Urethra, and gives Branches to the Skin and Muſcles at the fore-part of the Anus and root of the Penis, and to the Scrotum; while the Artery itſelf terminates on the under ſide of the Penis.

After diſperſing the Branches already mentioned, the Pudic Artery divides, at the root of the Penis, into three principal Branches, viz.

The *Firſt Branch*, which paſſes into the Bulb of the Urethra, and is continued forwards in the Corpus Spongioſum Urethræ, into the Cells of which many of its Branches open.

The Second Branch, termed *Profunda Penis*, which goes into the Crus Penis of the correſponding ſide, and directs its courſe in the Corpus Cavernoſum, through which it paſſes, in nearly a ſtraight line, to its other extremity; its Branches communicating with the Artery of the oppoſite ſide, and with the Cells of the Penis.

The Third Branch, called *Dorſalis Penis*, which turns between the Symphyſis of the Pubis and root of the Penis, and proceeds along the Dorſum, as far as the Glans, adhering cloſely to the Ligamentous Subſtance which incloſes the Corpora Cavernoſa, and ſending Branches to it and to the Integuments.

In the Female, the Pudic Artery has the ſame general courſe as in the Male.

After reaching the inner ſide of the Tuber of the Os Iſchium, it is extended forwards, and ſends Branches to the Anus, Perinæum, end of the Vagina, and Labia Externa, and terminates in the Clitoris, ſomewhat in a ſimilar manner as in the Penis. The Branch, which, in the Male, goes to the Bulb of the Urethra; in the Female, paſſing to the outer end of the Vagina.

The Blood is returned from the Branches of the Hypogaſtric Artery diſperſed upon the Organs of Urine and Generation, by the following Veins, viz.

The Vena Vesicalis, which returns the Blood from the Bladder.

The Vena Uterina Hypogastrica, which comes from the Uterus.

The VENA MAGNA IPSIUS PENIS, which runs along the middle of the Dorſum, and is often double to near the root of the Penis; after which it paſſes between this and the Arch of the Pubes, forming a Plexus which ſurrounds the Neck of the Bladder, and ſending out Branches which terminate in others at the ſides of this Viſcus.

The VENA PUDICA, which communicates anteriorly with the Branches of the Vena Magna at the root of the Penis, and afterwards paſſes back with the correſponding Artery.

The VENA TEGMENTORUM PENIS, which is formed by ſmall Subcutaneous Branches, and ends in the top of the Femoral Vein.

The Veins above mentioned, the laſt excepted, terminate in the HYPOGASTRICA, along with other Veins belonging to the Pelvis, to be afterwards deſcribed.

BLOOD-VESSELS OF THE CONTAINING PARTS OF THE ABDOMEN, AND OF THE PELVIS AND INFERIOR EXTREMITY.

ARTERIES.

ARTERIÆ LUMBARES.—The Lumbar Arteries, which are commonly four in number on each ſide, ariſe in pairs from the back-part of the Abdominal Aorta, in the ſame manner as the Intercoſtals do from the Aorta in the Thorax. The Left are a little ſhorter than the Right, which paſs under the Vena Cava to their place of deſtination.

They run firſt over the fore-part of the Bodies of the four uppermoſt Lumbar Vertebræ, and afterwards go between them and the Pſoæ Muſcles, in their way towards the ſides of the Abdomen.

They give Branches to the Spine, to the Spinal Marrow and its Membranes; are particularly diſperſed upon the Lumbar Muſcles, and upon the Tranſverſus and Obliqui Abdominis; and, perforating theſe, they alſo furniſh Branches to the large Muſcles and the Integuments in the back-part of the Loins.

Superiorly, they communicate with the lower Intercoſtal, Diaphragmatic, and Epigaſtric Arteries.

The firſt Lumbar paſſes behind the correſponding Crus of the Diaphragm, to which it gives Branches in its courſe outwards. The fourth winds round the Creſt of the Ilium, to be diſperſed upon the Iliacus Internus and Abdominal Muſcles.

Sacra Media. The Sacra Media is a ſmall Azygous Artery, which ariſes from the under and back part of the Aorta, immediately at its Bifurcation.

It generally ſends off a Branch over each ſide of the laſt Vertebra of the Loins, which ſupplies the place of a fifth Lumbar Artery. This Branch gives off others behind, in common with the Lumbars, while its outer Ramifications are exhauſted upon the Internal Iliac Muſcle.

The Sacral Artery afterwards deſcends along the middle of the Sacrum, as far as the Os Coccygis, ſending Branches to the Membranes and Subſtance of theſe Bones, and to the back-part of the Rectum.

ILIACÆ COMMUNES.

After giving off the Arteries of the Contents and of the containing parts of the Abdomen, the Aorta, upon the under part of the Fourth Lumbar Vertebra, divides into the Two Common Iliac Arteries, which are of equal ſize, and take a ſimilar courſe upon the right and left ſides.

They paſs obliquely downwards and outwards; and at the under and lateral parts of the laſt Vertebra of the Loins, *i. e.* oppoſite to the poſterior Symphyſis of the Pelvis, each divides into two others, a Poſterior, termed *Iliaca Interna*, or *Hypogaſtrica*, and an Anterior, termed *Iliaca Externa*.

ILIACA INTERNA.

The Iliaca Interna, or Hypogaſtrica, paſſes downwards and backwards in the poſterior and lateral part of the Cavity of the Pelvis, for about a couple of Fingers-breadth, after which it generally divides into a Poſterior and Anterior Set of Branches; the former ſupplying the parts neareſt the Sacrum and Ilium, the latter belonging more immediately to the parts about the Anterior region of the Pelvis.

POSTERIOR BRANCHES.

ILEO-LUMBARIS, or ILIACA INTERNA MINOR. The Ileo-lumbar is a ſmall Artery, ariſing ſometimes from the end of the Hypogaſtric, at other times from the beginning of the Glutea.

It paſſes outwards under the Pſoas Muſcle, and divides ſuddenly into Branches, one of which frequently forms a kind of *Lumbalis Ima*, or Fifth Lumbar Artery.

The other Branches go to the Pſoas and Iliacus Internus Muſcles, communicating there with the Lumbar Arteries and Circumflex Branches of the Ilium;—a particular Twig conſtituting an *Arteria Nutritia*, or *Medullaris* of the Os Ilium.

SACRÆ LATERALES. These are generally two or three in number, ariſing from the common Trunk, or the Ileo-lumbar, or frequently from the Gluteal Artery;—though ſometimes there is only a ſingle Artery, which deſcends by the ſides of the Sacral Holes, giving Branches, which ſupply the place of the Sacræ Laterales, and ſometimes alſo, though ſeldom, of the Sacra Media.

They furniſh Branches to the Muſcles, Membranes, and Nerves, on the ſurface of the Os Sacrum, and inoſculate by croſs Branches with the Sacra Media.

Their principal Trunks enter the Anterior Sacral Holes, to be diſtributed upon the Cauda Equina and the Membranes and Bones incloſing it.

ARTERIA GLUTEA. This is ſometimes termed *Iliaca Poſterior*, and is the largeſt Branch of the Hypogaſtric Artery.

Soon after it ariſes, it paſſes through the upper part of the great Notch of the Os Ilium, and is reflected over the edge of the Bone, after the manner of the Inferior Scapulary Artery.

Upon emerging from the Cavity of the Pelvis, and after giving Twigs to the Internal Iliac and Pyriform Muſcles,

cles, &c. it is divided into Two Great Branches; one more ſuperficial, the other deep-ſeated.

The *Superficial Branch* bends round between the Origin of the Gluteus Maximus and Medius, giving many Branches to each, but chiefly to the former, and inoſculating, by means of the Poſterior Sacral Holes, with the Sacral Arteries.

The *Deep Branch*, ſituated under the middle of the Gluteus Medius, is ſubdivided into Two Principal Branches, —a Superior and Inferior.

The *Superior* croſſes the Origin of the Gluteus Minor, and extends as far as the Spine of the Ilium. It gives Branches to the Gleteus Medius, and others paſſing downwards between the Gluteus Minimus and Ilium to the Joint of the Thigh;—one Branch forming a Nutritious Artery of the Ilium.

The *Inferior*, or Tranſverſe Branch, aſcends over the Gluteus Minimus, and gives many large Branches to the Gluteus Medius and Minimus; ſome of which extend to the Joint of the Thigh and parts adjacent.

At the under edge of the Gluteus Medius, it is divided into two Sets of Branches, one of which runs in a radiated direction cloſe upon the Bone, and is chiefly diſperſed upon the two ſmaller Glutei, while Branches of inferior ſize run ſome of them downwards to the Muſcles and Ligaments about the Joint of the Thigh, and others backwards to the parts about the Sacrum, communicating with the Lateral Sacral Arteries through the Poſterior Foramina of the Os Sacrum.

The other Set of Branches of the Gluteal Artery creeps in between the Gluteus Medius and Maximus Muſcles, upon the latter of which it is chiefly diſperſed.

ANTERIOR BRANCHES.

ARTERIA OBTURATORIA, or OBTURATRIX.—The Obturator Artery has its origin from the Trunk of the Hypogaſtric, or from the Ileo-lumbar, or from the Iſchiatic, and ſometimes from the end of the Iliaca Externa.

It deſcends in the Pelvis by the under ſide of the Pſoas Muſcle, and afterwards paſſes through the Hole at the upper part of the Obturator Ligament.

While in the Pelvis, it frequently gives Twigs to the Bladder and other parts near it, and ſends a Branch to the Obturator Internus in its paſſage through the Foramen Thyroideum.

After perforating the Ligament, it divides into Branches, one Set of which are diſperſed upon the parts about the Hip-joint, while another belong to the External Obturator Muſcle, and to the Muſcles which are ſituated at the upper and inner part of the Thigh,—the two Sets of Branches inoſculating with each other.

ARTERIA UMBILICALIS.—The Umbilical Artery ſends off Rami Veſicales from its under part or beginning; the reſt of it, in the Adult, being ſhrivelled into Ligaments, as already obſerved.

VESICALIS IMA of *Haller*.—This is a long and ſlender Branch which frequently comes off from the root of the

Pudic, at other times from the Hypogaſtric near the Umbilical, and runs to the under part of the Bladder, and to the Proſtate Gland.

ARTERIA UTERINA.—The Uterine, or Uterine-Hypogaſtric Artery, is diſperſed upon the Uterus, as has been already deſcribed.

HÆMORRHOIDALIS MEDIA.—The middle Hæmorrhoidal and ſmall Artery is ſometimes ſent off from the original Trunk, and at other times from ſome of its Branches, as the Pudic in the Male, or Umbilical in the Female.

It runs upon the Anterior Surface of the Rectum, and is chiefly diſtributed upon its Under Extremity, where it anaſtomoſes with the Hæmorrhoidalis Interna. It frequently ſends Branches to the under part of the Bladder; —to the Veſiculæ Seminales and Proſtate of the Male; and in the Female, to the Vagina and Bladder, by a Vaginal Trunk which ſupplies the place of the Vaginal Artery ſent off from the Uterine.

PUDICA COMMUNIS.—The Pudica Communis, termed by ſome Authors *Hæmorrhoidalis Externa*, belongs to the Parts of Generation and Anus, as was formerly taken notice of.

ARTERIA SCIATICA.—The Sciatic, or Iſchiatic Artery, is the largeſt of the Iliac Branches, the Glutea excepted.

It goes through the under part of the *Sciatic* Notch, accompanied by the Nerve of that name, having the Pyriform Muſcle between it and the Gluteal Artery.

It afterwards deſcends ſome way down the Thigh, in company with the Sciatic Nerve, in the hollow between the great Trochanter of the Thigh-bone and Tuber of the Iſchium,—covered by the Gluteus Maximus Muſcle.

Within the Pelvis, it ſends Twigs to the Rectum, Obturator Internus and Pyriformis. Without the Pelvis, it ſends an Artery backwards, termed *Coccygea*, which creeps along the Poſterior Sacro-Sciatic Ligaments, ſome of its Branches perforating the Fibres of the Ligament. It is diſtributed upon the Coccygeus, the Levator Ani, the Fat and Bones of the Coccyx, and ſends Branches upwards which anaſtomoſe with ſome of the lateral Sacral Arteries, through the Holes in the back-part of the Os Sacrum.

It gives next off a *Concomitant Branch* which aſcends along the ſurface of the Sciatic Nerve.

It ſends Branches to the Gluteus Medius and Minimus, to the Pyriform and other Rotator Muſcles of the Thigh, and to the Capſule of the Joint.

The principal Branches of the Sciatic Artery, however, are diſperſed upon the under part of the Gluteus Maximus Muſcle, ſome Twigs being ſent to the Muſcles ariſing from the Tuberoſity of the Os Iſchium, which communicate with the Obturator and Pudic Arteries.

ILIACA EXTERNA.

The Iliaca Externa, which appears in the Adult as the continuation of the common Trunk, deſcends along the Brim of the Pelvis, behind the Peritonœum, taking a curved direction by the ſide of the Pſoas Muſcle, and afterwards paſſes over it, and under the *Ligament of POUPART*, to form the Femoral Artery.

In this courſe, it does not ſend off any Branches, excepting ſometimes a Twig or two to the Peritonœum, Pſoas Muſcle, Lymphatic Glands, &c. till it is about to leave the Abdomen, where it gives riſe to two principal Arteries,—the *Epigaſtrica*, and *Circumflexa Oſſis Ilii*.

The ARTERIA EPIGASTRICA, obtaining its name from its ſituation in the fore-part of the Belly, goes off from the inner ſide of the Femoral Artery, immediately before that Veſſel gets under the *Ligament of POUPART*.

At its origin, it is a little bent downwards, and, about half an inch from the place where it firſt comes off, it croſſes obliquely upwards and inwards, at the upper and outer end of the Abdominal Ring, behind the Spermatic Cord in the Male, and round Ligament in the Female.

It proceeds in this oblique manner, under the inferior part of the Tranſverſus, till it reaches as high as the point of the Pyramidalis, after which it takes a perpendicular direction along the back-part, and near the middle of the Rectus Abdominis Muſcle.

Near its origin, it ſends Branches to the adjacent parts of the Pubes, one of which, in the Male, runs to the Spermatic Cord, and in the Female to the Round Ligament of the Uterus.

Under the Umbilicus, it generally divides into two Branches, variable in their ſize; one directed towards the Umbilicus, the other continued in the line of the Rectus Muſcle.

It furniſhes Branches to the Muſcles, Integuments, and Membranes of the fore-part of the Abdomen, communicates in ſeveral places with the Lumbar Arteries, and terminates a little above the Umbilicus, where it forms ſeveral diſtinct though ſmall Anaſtomoſes with the under end of the Mammaria Interna.

Circumflexa Ossis Ilii.—The Circumflex Artery of the Ilium, almoſt as large as the Epigaſtric Artery, ariſes nearly oppoſite to it, though frequently a little lower,—immediately behind the under end of the Fallopian Ligament.

It runs at the inner edge of the Creſt or Spine of the Os Ilium, between the Tranſverſalis and Obliquus Internus, till it arrives near the Vertebræ of the Loins.

It gives Branches to the Pſoas, Iliacus, and Sartorius Muſcles, to the under end of the Obliqui and Tranſverſus Abdominis, and at length communicates with the Epigaſtric, and with the Inferior Intercoſtal and the Lumbar Arteries.

Arteria Femoralis.

The Femoral, or Crural, or Common Femoral Artery,—the continuation of the External Iliac,—paſſes out of the Abdomen between the Ligament of Poupart and Brim of the Pelvis.

At its firſt exit, it is ſituated ſuperficially over the Ball of the Os Femoris, having the inner edge of the common end of the Pſoas and Iliacus Internus between it and the Joint.

Farther down, it is lodged deep in a hollow at the upper and inner part of the Thigh, with the Rectus and Sartorius upon the outer, and the Adductores Femoris upon the inner ſide of it.

Here, it is covered by the Glands of the Groin, and by the general Aponeuroſis and Fat; and from this part it deſcends at the inſide of the Thigh, turning gradually backwards, till it reaches the Ham.

From the top of the Femoral Artery, a few ſmall Branches are ſent off to the Skin of the Abdomen, to the Superficial Muſcles and Inguinal Glands, and to the common Integuments at the upper part of the Thigh; alſo one or two others, termed *Pudicæ Externæ*, to the Pubes and the Integuments of the External Parts of Generation and inſide of the Thigh.

About two Fingers-breadth below the Ligament of POUPART, the Femoral Artery divides, ſomewhat like the Common Iliac, into Anterior and Poſterior parts:—The former is the Femoral Artery ſtrictly ſo called, the latter is termed *Profunda Femoris.*

PROFUNDA FEMORIS.

The ARTERIA PROFUNDA, alſo called VASTA, POSTERIOR, or MUSCULARIS FEMORIS, concealed at firſt by the proper Femoral Trunk, gives off at its Origin from that Artery ſmall Branches, ariſing ſeparately or in a common Trunk, and diſperſed upon the Integuments, Muſcles, and Capſular Ligament, at the upper and fore part of the Thigh.

It gives next, from its Origin alſo, two large Branches,

— the *Circumflexa Interna*, and *Circumflexa Externa*,—which run in oppoſite directions at the upper part of the Thigh.

The CIRCUMFLEXA INTERNA, though moſt frequently coming off from the beginning of the Profunda, often ariſes higher than it, from the top of the Femoral; and there are now and then two of them, one a little lower than the other.

It paſſes between the under end of the Pſoas, and the Pectinalis Muſcle, and afterwards turns round the inner part of the Neck of the Thigh-bone.

It ſends off—

Branches to the Pectinalis, Triceps, and Capſule of the Joint.

A *Superior* or *Anterior Aſcending Branch*, to the Triceps and Obturator Muſcles, having a conſiderable anaſtomoſis with the Obturator Artery at the external margin of the Foramen Thyroideum. From this Branch a Twig is detached which enters the Breach at the under and fore part of the Acetabulum, to be diſperſed upon the Ligamentum Rotundum and the ſubſtance called *Gland of the Joint*.

An *Inferior*, or *Inferior Poſterior Circumflex Branch*, which is the continuation of the Trunk.

It bends round the Neck of the Thigh-bone, ſending ſmall Branches to the Capſule of the Joint, to the Obturator, Quadratus, and Adductor Femoris; communicating with the Obturator and Sciatic Arteries.

CIRCUMFLEXA EXTERNA.—The Circumflexa Externa ariſes for the moſt part nearly oppoſite the former, but frequently a little lower.—Now and then it has a double

Origin, one of the Trunks coming off higher than the other.

It paſſes outwards between the upper ends of the Rectus, Tenſor Vaginæ Femoris, and Vaſtus Externus Muſcles, and over the root of the Great Trochanter of the Os Femoris.

It ſends Branches upwards to the under part of the Glutei and to other Muſcles placed at the inferior and back part of the Pelvis, which anaſtomoſe with thoſe running down from the Arteria Glutea.

Others which have more of a lateral direction, and are diſtributed upon the Muſcles at the upper and back part of the Thigh, and upon thoſe more immediately about the Joint,—communicating with the Branches of the Circumflexa Interna.

The largeſt Branches deſcend between the Rectus Femoris and Vaſtus Externus; one, longer than the reſt, reaching almoſt as far as the outer part of the Knee.

The Profunda Femoris having detached the Circumflex Arteries, ſinks deep behind the Trunk of the Femoralis, and, paſſing between the Adductor Muſcles and Vaſtus Internus, deſcends near to the middle of the Thigh.

In its deſcent, it ſends off, or is divided into principal Branches, termed *Rami Perforantes*, which, after ſending off ſmall Branches to the Triceps Muſcle, perforate it, to be diſperſed upon the Flexors and other Muſcles on the back-part of the Thigh.

The Perforantes come off in the following ſucceſſion, viz.

The *Perforans Prima*, which ariſes near the Small Trochanter, perforates the Triceps a little farther down, and furniſhes Branches to the Muſcles in the upper and back part of the Thigh.

It forms numerous Communications with the Circumflex Arteries, about the root of the Great Trochanter, and anaſtomoſes in particular with the under end of the Sciatica.

The *Perforans Secunda* or *Magna*, which comes off ſome way below the former, and is the largeſt of the perforating Arteries.

It gives Branches to the Muſcles in general about the middle of the back-part of the Thigh, particularly to the Adductors Vaſti and to the Flexors of the Leg; and communicates above with Arteries of the Perforans Prima, and with the Circumflex Arteries.

Beſides theſe, there is one, and ſometimes two other perforating Branches, which are greatly inferior in ſize to the two former, and are loſt upon the Flexors at the under and back part of the Thigh; one Twig ſent off from theſe ſometimes forming a *Nutritia* or *Medullaris* of the Os Femoris.

The Femoral Artery, after giving off the Profunda Femoris, paſſes down, ſtill covered by the Faſcia of the Thigh, between the Vaſtus Internus and inſertion of the Triceps, giving only ſmall Branches to the Muſcles and Integuments, at the fore and inner ſide of the Thigh.

One Branch, termed *Ramus Anaſtomoticus Magnus*, more conſpicuous than the reſt, is ſent off previous to the paſſage of the Artery through the Tendon of the Triceps. It deſcends with many Ramifications upon the Vaſtus Internus, upon which it is chiefly diſperſed; inoſculating with the Deſcending Branch of the Circumflexa Externa; and below, with Branches about the Knee.

About the middle of the inſide of the Thigh, it is ſituated behind the Sartorius Muſcle; and, nearly two thirds down upon the Os Femoris, it perforates the Triceps, paſſing between that Muſcle and the Bone, in its way to the Leg.

Having perforated the Triceps, it is found in the back-part of the Thigh, where it ſends *Rami Perforantes*, to the Muſcles and Integuments on the back-part of the Thigh.

Of the Rami Perforantes two are more conſtant and conſiderable than the reſt, and called by ſome Authors *Perforans Superior*, and *Perforans Inferior*; the former diſtributed to the Muſcles at the back and inner, and the latter, after ſending off the *Principal Medullaris*, going to thoſe of the back and outer part of the Thigh; and both communicating above with the deſcending Branches already deſcribed.

In this part of the Thigh the Artery lies cloſe upon the Bone, and adheres firmly to it, till it reaches the Ham, where it is termed *Poplitea*.

ARTERIA POPLITEA.

The ARTERIA POPLITEA, ſtrictly ſo called, is that part of the Femoral Artery which lies over the Joint of the Knee; the name, however, is generally applied to all that part of it which extends between the Poſterior part of the Tendon of the Triceps and under edge of the Popliteal Muſcle, or where the Artery is divided into two Great Branches.

It is lodged deep in the Hollow between the Ham-ſtrings, Condyles of the Os Femoris, and Heads of the Gaſtrocnemius Externus Muſcle.

Where it paſſes over the Joint it lies cloſe upon the Capſule, in the hollow between the Ham-ſtrings, and between the Condyles of the Os Femoris, covered by its aſſociate Vein and Nerve, and generally by a large quantity of Fat.

It gives off ſeveral Branches, termed *Articulares Superiores* and *Inferiores*, to the Joint of the Knee.

Four of theſe, ſituated, two above and two below the Joint, are more regular and conſtant than the reſt, viz.

The *Articularis Superior Interna*, which turns round the Os Femoris, above the Inner Condyle, paſſes under the Semimembranoſus and Semitendinoſus, and, after perforating the Tendon of the Triceps Muſcle, is diſperſed upon the upper and inner part of the Knee, anaſtomoſing above with Branches ſent down from the Femoral Artery.

The *Articularis Superior Externa*, which ariſes nearly oppoſite to the former, paſſes outwards between the Tendon of the Biceps and Body of the Os Femoris, immediately above its outer Condyle, and is loſt upon the Vaſtus Externus, and upon the upper and outer part of the Knee, its Branches anaſtomoſing with thoſe of its fellow, and particularly with the long deſcending Branch of the Circumflexa Externa.

The *Articularis Inferior Interna*, which ariſes oppoſite the bending of the Joint, paſſes downwards, and then turns round the Tibia, immediately below its Inner Condyle.

It ſends Branches firſt to the back-part, then to the inner ſide of the Knee; ſome of them inſinuating by the Semilunar Cartilages into the internal part of the Joint.

It communicates above with the Branches of the Articularis Superior Interna.

The *Articularis Inferior Externa*, which comes off near the former, and paſſes firſt downwards, then outwards, between the External Lateral and the Capſular Ligament, to be diſperſed upon the under and outer part of the Knee and inner part of the Joint; communicating with its fellow of the oppoſite ſide, and above, with the Branches of the Articularis Superior Externa.

Beſides the Superior and Inferior Articular Arteries, another Branch is frequently found, termed *Articularis Media*, or *Azygos*, which is irregular in its origin, ariſing ſometimes from the Trunk of the Poplitea, at other times from one of the Superior Articular Branches. It is ſituated between the Condyles, and is exhauſted upon the Ligaments, Fat, and Bones, at the back-part of the Joint; inoſculating with all the adjoining Branches.

The other leſs conſtant Articular Branches are diſperſed upon the Muſcles a little above the Joint.

The Arteria Poplitea, having furniſhed Branches to the Joint of the Knee, gives others to the Muſcles at the upper and back part of the Leg, two of which, termed *Surales*, more conſiderable than the reſt, paſs into the heads of the Gaſtrocnemius Externus.

The Trunk of the Artery paſſes afterwards between the heads of the External Gaſtrocnemius, and commonly from two to three inches below the bending of the Knee, and at the under and outer edge of the Popliteus, or upper end of the Soleus, divides into two large Arteries, the *Tibialis Antica*, and *Tibialis Poſtica.*

TIBIALIS ANTICA.—The Tibialis Antica ariſes from the fore-part of the Poplitea, and paſſes directly through the upper end of the Interoſſeous Ligament to the fore-part of the Leg.

In its deſcent in the Leg, it adheres cloſely to the anterior ſurface of the Interoſſeous Ligament; lying at firſt between the Tibialis Anticus and Extenſor Digitorum, and then between the Tibialis and Extenſor Pollicis.

A little above the Ankle, it paſſes upon the outer and fore part of the Tibia, and, getting under the Annular Ligament and Extenſor Pollicis, advances in a waving direction upon the convex ſurface of the Foot.

It ſupplies, in general, the Muſcles and Integuments which belong to the outer and fore part of the Leg and upper part of the Foot, and is ultimately ſpent upon the Deep Muſcles of the Sole.

Its Branches come off in the following order, viz.

A *Small Branch* ſent off before the Trunk perforates the Interoſſeous Ligament, to be diſperſed upon the Muſcles, Bones, &c. near the Joint; the ſuperior Twigs running in a retrograde direction, and inoſculating with the Inferior Articular Branches.

The *Recurrens Anterior*, which ariſes from the Artery after it has perforated the Ligament, and is diſtributed upon the Muſcles at the upper part of the Leg, and upon the Ligaments at the under part of the Knee; anaſtomoſing there with the Inferior Articular Arteries.

Numerous Branches ſent off in a lateral direction to the Muſcles and Integuments on the outer and fore part of the Leg.

The *Malleoli Interna*, which comes off near the lower end of the Tibia, and is diſperſed on the parts about the Inner Ankle.

The *Malleoli Externa*, which ariſes a little lower than the former, and is diſtributed to the parts near the outer Ankle.

The *Arteria Tarſea*, which takes its origin a little before the bending of the Ankle-joint, and is more conſiderable in ſize than the Malleolar Branches.

It paſſes obliquely outwards and forwards under the Extenſor Brevis Digitorum, and ſends Branches to the Joint of the Ankle, where it communicates with the Malleolar Arteries.

It ſupplies the greater part of the Muſcles, Integuments, &c. on the upper and outer part of the Foot, and ſends Branches, termed *Interoſſei*, to the Muſcles between the Metatarſal Bones of the ſmall Toes,—which, however, are frequently derived from the Metatarſal Artery.

Branches from the Artery upon the Dorſum Pedis, diſtributed to the Integuments, Muſcles, Membranes, and Bones, at the upper and inner ſide of the Foot.

The *Arteria Metatarſea*, which goes off about the middle of the Dorſum Pedis, and paſſes obliquely towards the root of the Little Toe, aſſiſting the former Artery in furniſhing Branches to the upper ſide of the Foot and Toes, and ſometimes, in part or entirely, ſupplying the place of that Artery.

The remaining portion of the Anterior Tibial Artery afterwards advances between the Extenſor of the great, and long Extenſor of the ſmall Toes, ſending Twigs to the adjacent parts, and dividing, between the Metatarſal Bones of the Great Toe and that next it, into a *Large Poſterior* and a *Small Anterior Branch.*

The *Poſterior Branch*, termed *Anaſtomotica Profunda*, which may be conſidered as the continuation of the Trunk, ſinks between the Metatarſal Bones of the Two firſt Toes, and anaſtomoſes with a deep Artery in the Sole.

The *Anterior Branch* runs forwards, under the name of *Dorſo-metatarſea*, or *Dorſalis Pollicis*, to be diſperſed upon the Great and Second Toes.

TIBIALIS POSTICA.—The Tibialis Poſtica, ſomewhat larger than the Antica, divides about a finger's-breadth under the origin of the Tibialis Antica, into the Fibularis, and Tibialis Poſtica ſtrictly ſo called.

The FIBULARIS, termed alſo *Peronea*, which is ſmaller than either of the Tibial Arteries, runs down at the inner ſide of the Fibula, for a conſiderable way along the Leg, and is ſituated, firſt between the Tibialis Poſticus and Flexor Longus Pollicis, and is afterwards covered by the laſt-named Muſcle.

Its Branches are diſtributed to the Muſcles at the outer part of the Leg in the neighbourhood of the Fibula,—a ſmall Medullary Branch alſo penetrating the ſubſtance of that Bone.

A little above the inferior Articulation of the Tibia and Fibula, it ſends a Branch forwards, termed *Fibularis* or *Peronea Anterior*, which perforates the Interoſſeous Ligament, and is diſperſed upon the fore-part of the Ankle, where it anaſtomoſes with the External Branch of the Tibialis Antica.

The continuation of the Trunk, ſometimes termed *Fibularis* or *Peronea Poſterior*, deſcends behind the Malleolus Externus, to the outer and back part of the Foot, anaſtomoſing with the External Malleolar and Tarſal Branches of the Tibialis Antica.

The Tibialis Postica, properly ſo called, paſſes down at the back-part of the Tibia, and runs over the Tibialis Poſticus and Flexor Digitorum, and under the Gaſtrocnemius Internus, in its deſcent through the Leg.

At the under part of the Leg, it becomes more ſuperficial, running between the Tendo Achillis and Malleolus Internus; having the Tibialis Poſticus and Flexor Digitorum Longus on the inner, and the Flexor Longus Pollicis on the outer ſide of it.

From the Ankle, it runs in the Hollow of the Os Calcis, and behind the Abductor Pollicis, to the Sole of the Foot.

Its Branches ſupply the Muſcles at the back and inner part of the Leg, and the different parts of the Sole; forming many Inoſculations with the Branches of the anterior Tibial, and the Fibular Artery.

In its courſe along the Leg, it gives off—

Numerous Branches, ſimilar to thoſe of the Tibialis Antica, to the ſurrounding Muſcles:

The *Arteria Nutritia Tibiæ*, which begins a little below the upper end of the Trunk, deſcends for ſome way in the Leg, and gives Branches to the Deep Muſcles and Membranes near it, and one Branch termed *Arteria Medullaris*, which enters the Hole near the middle of the Bone:

Several

Several Branches to the parts behind, and at the inner ſide of the Ankle and Heel, which communicate with others of the Anterior Tibial Artery.

The Trunk of the Artery divides in the Hollow of the Os Calcis, at the place where it is about to go behind the Abductor Pollicis, into two principal Plantar Branches,—the *Interna* and *Externa.*

The Plantar Arteries run forwards under the Aponeuroſis Plantaris, having the Flexors of the Toes between them.

The PLANTARIS INTERNA paſſes near the inner ſide of the Sole, between the Aponeuroſis Plantaris and Abductor Pollicis.

It gives *Branches* which run in a retrograde direction to the back-part of the Ankle and adjacent parts of the Heel:

Several Branches from each ſide, which go forwards to the Muſcles and Integuments, and other parts at the concave edge of the Sole.

At the root of the Great Toe, it ſends a *Principal Branch* to its inner ſide; it then paſſes under the Flexor Longus Pollicis, and, after anaſtomoſing with the Arcus Plantaris, gives off a *Large Branch* which ſplits into two,—*one* to the outer ſide of the Great Toe, and the *other* to the adjacent ſide of the Toe next it.

The PLANTARIS EXTERNA,—which may be conſidered as the continuation of the Trunk, being in general much larger than the Interna,—paſſes obliquely outwards between the Flexor Brevis Digitorum and Flexor Acceſſorius,

rius, till it reaches the Baſe of the Metatarſal Bone of the Little Toe.

It is afterwards arched forwards, between the Flexors and Metatarſal Bones of the ſmall Toes, the Trunk being continued to the root of the Great Toe, under the name of *Arcus Plantaris*.

The External Plantar Artery ſends off—

A *Conſiderable Branch*, firſt to the under, then to the outer part of the Heel, which communicates externally with Branches of the anterior Tibial and the Fibular Arteries:

Several Branches to the Flexors of the Toes, and to other parts in the outer portion of the Sole, which communicate, on the inner ſide, with the Branches of the Plantaris Interna; and at the outer, with thoſe of the anterior Tibial Artery.

The ARCUS PLANTARIS gives out—

Several Branches to the deep Muſcles of the Sole, particularly,

Rami Interoſſei to the Muſcles between the Metatarſal Bones:

A *Branch* to the outer ſide of the Little Toe:

Three Large Digital Arteries, which are forked at the roots of the Toes, and run along the edges of theſe, in the manner the Digital Arteries do along the Fingers.

Between the Metatarſal Bones of the Great Toe and the one next it, the Plantar Arch anaſtomoſes with the Poſterior or perforating Branch of the anterior Tibial Artery, forming a free communication between the Arteries of the upper and under ſide of the Foot. Frequently it ſends off here a Digital Artery, which ſorks and runs along the outer ſide of the Great Toe, and inner ſide of the Toe next it, ſo as to ſupply the place of one of the Branches of the Internal Plantar Artery.

At the roots of the Toes, the Interoſſeous Arteries of the upper part of the Foot, alſo form diſtinct Anaſtomoſes with the anterior extremities of the Trunks of the Digital Arteries.

VEINS.

The VEINS of the INFERIOR EXTREMITIES, like thoſe of the SUPERIOR, conſiſt of a *Subcutaneous* and a *Deep* ſet, and, like them alſo, are furniſhed with numerous Valves.

SUBCUTANEOUS VEINS.—The Subcutaneous Veins are ſituated between the Common Integuments and General Aponeuroſis, and, in many parts, are entirely concealed by the Fat. They anaſtomoſe frequently with each other by large Branches, and have ſeveral communications alſo with the deep-ſeated Veins.

They form two principal Trunks, called *Saphæna Major* and *Saphæna Minor*;—the term *Saphæna* applied from the Vein being ſuppoſed to be always *viſible*.

The SAPHÆNA MAJOR begins upon the upper ſide of the Foot, runs over the fore-part of the inner Ankle, and aſcends in the Leg at the inner edge of the Tibia.

From the Leg, it paſſes up by the inſide of the Knee, and afterwards, from the inner to the upper and fore part of the Thigh.

It is at firſt compoſed of Veins, derived from the upper and inner part of the Dorſum Pedis, which have frequent Anaſtomoſes with each other, and are of conſiderable ſize.

In its aſcent, it is joined by Branches from the ſuperficial parts of the Leg, and is frequently ſplit into a Plexus, ſome way below the Knee.

It receives Branches from the ſuperficial parts of the Thigh, and ſmall Twigs from the Inguinal Glands.

It terminates in the top of the Femoral Vein, nearly oppoſite to, or a little higher than, the origin of the Arteria Profunda.

The SAPHÆNA MINOR ariſes upon the outer ſide of the Foot, and afterwards paſſes behind the Malleolus Externus.

From this, it aſcends, in the back-part of the Leg, upon the ſurface of the Gaſtrocnemius Externus, and goes into the Ham.

It is formed by the Veins of the upper and outer part of the Foot, and is joined to the Saphæna Major, over the Metatarſal Bones, by one or more Arches, which receive a Plexus of Branches into their lower or convex part.

It is joined by the Superficial Veins of the outer and back part of the Leg, which have frequent anaſtomoſes with each other, and with the Branches of the Saphæna Major.

It terminates in the Vena Poplitea, and communicates conſtantly by a ſmall Branch with the Saphæna Major, a little above the Knee.

DEEP VEINS.—The Deep Veins of the Leg, like thoſe of the Fore-arm, run cloſe at each ſide of their Arteries, and are double their number, but differ a little from the Radial and Ulnar Veins, in being proportionally larger.

The TIBIAL and FIBULAR VEINS anaſtomoſe in ſome places with each other, and alſo communicate with the Subcutaneous Veins.

At the upper part of the Leg, they are united together, to form the Vena Poplitea, and the union is nearly at the ſame place where the correſponding Arteries come off.

The VENA POPLITEA adheres cloſely to the upper or poſterior ſurface of the Artery, which it in a great meaſure conceals, and is commonly ſingle, excepting a ſmall Vein which ſometimes accompanies it, and communicates with it.

The Popliteal Vein receives the Venæ Surales and Articulares, and the Saphæna Minor; after which it forms the Femoral Vein.

The VENA FEMORALIS receives the Veins which correſpond with the perforating Branches of the Femoral Artery, and paſſes in through the Triceps, where the Artery comes out.

In the middle of the Thigh, it lies deeper than the Artery, afterwards turning gradually to its inner ſide; and at the upper part of the Thigh, is joined by the Vena Profunda.

The VENA PROFUNDA receives the Veins correſponding with the Branches of the Artery of that name, and is ſometimes of a large ſize, being then in a great meaſure the continuation of the Vena Poplitea,—a ſmall Vein only in ſuch caſes accompanying the Trunk of the Femoral Artery.

Beſides the Vena Profunda, the Femoral Vein takes in ſmall Veins from the External parts of Generation, from the Inguinal Glands, and from the other ſuperficial parts of the Groin;—and, in particular, it receives a Branch of conſiderable ſize, which deſcends from the Integuments of the fore-ſide of the Abdomen.

The Trunk of the Femoralis, having received the different Veins of the Inferior Extremity, paſſes into the Abdomen, behind Poupart's Ligament, being ſtill ſituated at the inner ſide of the Artery,—after which it forms the Iliaca Externa.

The Iliaca Externa receives into its beginning the Epigaſtric, and Circumflex Vein of the Os Ilium, and ſometimes the Vena Obturatrix.

It is ſituated at the inſide of the External Iliac Artery, and afterwards croſſes behind it on the right, and behind the Internal Iliac Artery on the left ſide of the Pelvis, to join the Trunk of the Hypogaſtric Vein.

The Vena Hypogastrica, or Iliaca Interna, is ſituated at the outer ſide of the Concomitant Artery, and receives the different Veins which correſpond with the Branches of that Artery, and which are furniſhed with Valves where they are ſituated among the Fleſhy parts of the Pelvis.

The External and Internal Iliacs unite, and form the Common Iliacs, a little below the diviſion of the correſponding Arteries.

The Iliacæ Communes aſcend by the right ſide of their reſpective Arteries, and a little below the Bifurcation of the Aorta,—or upon the fore-part of the Fifth Lumbar Vertebra,—unite to form the Inferior Cava, ſituated, as formerly mentioned, at the right ſide of the Aorta.

The VENA CAVA INFERIOR,—which is much larger than the Cava Superior, and greatly exceeds in ſize the deſcending *Aorta*,—receives, at its beginning, the Vena Sacra, and higher, the Venæ Lumbares, which, in the left ſide, paſs behind the Trunk of the Aorta.

It likewiſe receives the Venæ Renales, and the Spermatica of the Right ſide.

At length it takes in the Venæ Hepaticæ and Diaphragmaticæ, and, perforating the Diaphragm at the root of the Liver, it terminates in the Right Auricle of the Heart.

PART VII.

OF

THE NERVES.

OF

THE NERVES IN GENERAL.

THE Nerves are firm, white Cords, which are generally conſidered as being directly continued from the Medullary Subſtance of the Brain and Spinal Marrow; —although Inſtances have been frequently met with, where the Brain, and even the Spinal Marrow, have been found nearly obliterated in the Fœtus, and yet the Nerves retained their uſual appearance.

They are compoſed of *Funiculi* cloſely connected, and each of theſe again of ſmaller *Fibrillæ,* which may be ſubdivided into parts ſo extremely minute, as almoſt to elude the naked Eye, but which may be readily ſeen by the aſſiſtance of the Microſcope:—No Cavity, however, has been yet obſerved in them.

The *Medullary Part* of the Fibrillæ appears to be furniſhed with Cineritious Subſtance derived from their Pia

Mater; in proof of which, they are obſerved to be in general of a browner colour than the Medullary Subſtance of the Brain, and larger in their courſe than at their ſuppoſed origin.—MONRO's *Obſ. on Nerv. Syſt.*

The Medullary Subſtance of the Fibrillæ is *pulpy* and tender, but rendered thicker and ſtronger by the coverings they receive from the Tunica Arachnoidea, and Pia Mater, while within the Bones; and more particularly by the additional covering given them by the Dura Mater upon their exit.

The Dura Mater, in its paſſage through the Baſe of the Cranium, and between the different Vertebræ, is connected by its External Surface to the Pericranium and Perioſteum; while the inner part of it, together with the Tunica Arachnoidea and Pia Mater, is continued along the Nerves.

The *Involucra*, or *Coverings*, incloſe each of the Nerves in general, and likewiſe the ſeveral Fibrillæ of which they are compoſed, whereby their ſize, as well as ſtrength, is greatly increaſed.

The Nerves, ſoon after leaving the Bones, have the Dura Mater ſo intimately connected with them, that it has been conſidered, by ſome Authors, as degenerating into condenſed Cellular Subſtance, notwithſtanding it ſtill retains the general appearance of the Dura Mater.

Upon examining the Nerves, eſpecially the ſmall ones, in a living or recently dead animal, they are obſerved to have numerous *White Lines* placed tranſverſely, or in a ſerpentine direction.—*Obſ. on Nerv. Syſt.* Tab. XIII.

When the Nerves are moderately ſtretched, this appearance becomes leſs evident; and when extended conſiderably, or when macerated in water, it vaniſhes entirely.

Prochaska *(De Carne Muſculari)* ſuppoſes theſe Serpentine Lines to be owing to a decuſſation of Veſſels and Fibres of Cellular Subſtance ſtraitening the Nerves.

Dr Monro conſiders them as Folds or Joints allowing the Nerves to accommodate themſelves to the various ſtates of Flexion and Extenſion.

The Nerves are ſupplied with *Arteries* from the neighbouring Blood-veſſels, to which they return correſponding *Veins*.

The Arteries, however, are ſmall, and difficult of injection, excepting in the large Nerves, where they are more conſiderable, and where, after a minute injection, the Nerve receives the colour of the matter injected.

Upon dividing the Nerves, they are not found to poſſeſs much *contractility;* while the Arteries, upon being cut, are obſerved to retract very conſiderably.

They are generally lodged in the common Cellular Subſtance and Fat, and in the Interſtices of the Viſcera and Muſcles, where they are prevented from being compreſſed; though in ſeveral parts they are expoſed to the hardneſs of Bones, or to the action of Muſcles, over or through which they paſs.

In their courſe through the different parts of the Body, they generally run as ſtraight as is conſiſtent with the nature of the particular part over which they paſs, and their own ſafety.

In their progreſs, they divide into *Branches*, which become gradually ſmaller, and which, though taken colectively, are inferior in ſize to the Trunks from which they iſſue.

The Branches generally go off at acute angles; but in ſeveral places they have a retrograde direction.

They have commonly the ſame kind of diſtribution in the oppoſite ſides of the ſame Subject, and vary little in this reſpect in different Subjects.

In ſome parts of the Body, ſeveral Nerves unite together, and form a *Plexus* or *Net-work*; in others, they unite into a *Common Trunk*; and in many, by ſuch an union, a hard Knot, termed *Ganglion*, is formed.

When the *Plexuſes*, or the *Common Trunks*, are minutely examined by ſlitting open their Coverings, it is found, that their Fibrillæ are intermixed in ſuch a manner, that each of the Nerves paſſing out from the Plexus, or from the Common Trunk, is compoſed of Fibrillæ from ſeveral, or from all the Nerves which entered it, in conſequence of which, the Organs in general are furniſhed with Nerves from various ſources. *Obſ. on Nerv. Syſt.*

The *Ganglia* differ from each other in ſize and figure: They have thicker Coats, and are more Vaſcular than the Nerves; and are larger than the whole of the Nerves, taking conjunctly, which enter into or go out from them.—They are ſuppoſed to ſerve as freſh Sources of Nervous Influence.

They are compoſed of Nervous Fibrillæ, covered by ſomething like a Cineritious Matter, and are ſo divided, multiplied, and intermixed, that each of the Nerves paſſing out from a Ganglion is found to be compoſed of Fibrillæ derived from the greater part of the Nerves which enter it. —*Obſ. on Nerv. Syſt.*

Where Nerves paſs out from the ſide of a Ganglion, they are compoſed of Fibrillæ which come off in contrary directions;—the one ſet from the beginning, the other from the oppoſite extremity of the Ganglion.

The Nerves which go out from the different Ganglia have the ſame ſtructure with thoſe which enter them, but are found, with only a few exceptions, to be rather larger.

In the Trunk of a Nerve, the Cords appear to run parallel to each other; but when macerated in water, ſo as to diſſolve the Cellular Subſtance, or when otherwiſe accurately examined, they are ſeen evidently to intermix ſomewhat after the ſame manner of the Fibrillæ in the Plexus, or in the Ganglia.—*Obſ. on Nerv. Syſt.*

The Termination of the Nerves is ſoft, pulpy, and pellucid, as is diſtinctly ſeen in the Retina of the Eye or Ear; the external Covering being entirely laid aſide, while the Pia Mater, in particular, accompanies them throughout.

The Nerves preſerve the Motion of the Muſcular Fibres.

They conſtitute the immediate Organs of Senſation, and convey Impreſſions made upon them to the Mind.

The manner in which theſe Impreſſions are produced, —whether by a Vibration communicated to the Nerves; —or by a Liquid called *Nervous Fluid*, contained and moving in them;—or by an Electric Matter common to them and many other Subſtances;—or in what manner that Power acts, termed *Animal Electricity*, which has been lately diſcovered to take place in the Animal Kingdom, upon the application of certain Metals;—is not yet underſtood.

DISTRIBUTION OF THE NERVES.

THE NERVES are diſtinguiſhed into two Claſſes; one ariſing from the Brain, termed *Cerebral;* the other from the Spinal Marrow, termed *Spinal Nerves.*

The Cerebral Nerves are generally reckoned *Nine* or *Ten Pairs* in number, beſides a particular Pair, which has the name of *Symphathetic.*

They paſs through the Holes in the Baſe of the Cranium, and receive their reſpective Names according to their Order; or from their Functions; or from the Parts on which they are diſperſed, &c.

The Spinal Nerves conſiſt of *Twenty-nine* or *Thirty Pairs,* which paſs out between the different Vertebræ, beſides a Pair called *Acceſſory,* which enter the Cranium from the top of the Spinal Marrow, and afterwards paſs out with one of the Cerebral Nerves.

NERVES WHICH PASS THROUGH THE BASE OF THE CRANIUM.

The FIRST PAIR, or OLFACTORY NERVES,—ariſe, on each ſide of the Brain, by three ſeparate Striæ, from the Corpora Striata, at the under and back part of the Anterior Lobes, near where the Carotid Arteries enter the *Fiſſures of* SYLVIUS.

They are more tender than the other Nerves, and alſo differ from them in not being compoſed of Faſciculi.

They run each in a Furrow, upon the under Surface of the Anterior Lobes of the Brain, converging a little, and becoming ſomewhat larger, till they reach the Cribriform Plate of the Œthmoid Bone.

Upon this plate, each forms an *Oblong Bulb*, which, in colour and conſiſtence, reſembles the Cortical part of the Brain, but is mixed with ſtreaks of Medullary Matter.

From this Bulb, numerous Nervous Filaments are ſent off, which paſs through the Holes of the Cribriform Plate, and now become firm and ſtrong like the other Nerves, by receiving a covering from the Dura Mater.

After entering the Noſe, they divide into two Portions or Planes;—one paſſing on the Septum, the other upon the Oſſa Turbinata, and other parts oppoſite to the Septum, and both running at firſt in Grooves of the Bones.

They form a beautiful Plexus, which is ſpread out upon that ſide of the Membrane of the Noſe which is contiguous to the Bones, and may be traced a conſiderable way upon it in diſtinct Threads, which, becoming gradually ſmaller, ſink into the Membrane, and are ſuppoſed to terminate on the ſurface next the Cavity of the Noſe, there conſtituting the Organ of Smell.

The SECOND PAIR, or OPTIC NERVES,—which are of great ſize,—ariſe from the Thalami Optici, and are connected in their paſſage to Tubercles at the root of the Infundibulum, which furniſh them with an addition of Medullary Subſtance.

They are of a purer white than other Nerves, having leſs Cineritious Matter entering their compoſition, and differ alſo in the Pia Mater furniſhing them with a general Covering, before it inveſts the ſeveral Faſciculi of which they are formed.

At the fore-part of the Sella Turcica, they unite, and have their Medullary Parts intimately intermixed.

From this union, they go obliquely outwards and forwards through the Foramina Optica into the Orbits; and advancing in the Orbits in a waving direction,—to prevent them from being over-ſtretched in the motions of the Eye,—they perforate the Balls, to be expanded into the Retinæ, which have been already deſcribed.

The THIRD PAIR, or MOTORES OCULORUM,—ſmaller than the Optic Nerves,—ariſe at the under, inner, and back part of the Crura Cerebri, or between the Corpora Albicantia and Tuber Annulare, by numerous Threads which are ſoon collected into their reſpective Trunks.

They paſs outwards, perforate the Dura Mater at the ſides of the Poſterior Clinoid Proceſs, and running along the upper part of the Cavernous Sinuſes, at the outſide of the Carotid Arteries, they get through the Foramina Lacera into the Orbits.

Upon entering the Orbits, they divide into ſeveral Branches, which ſupply the greater number of the Muſcles of the Eye, in conſequence of which the Nerves have obtained their particular name.

A Branch runs to each of the Muſcles within the Orbit, excepting the Trochlearis and Abductor; and the Nerve likewiſe aſſiſts in forming a ſmall Ganglion, termed *Ophthalmic*, from which Twigs are ſent off to ſupply the Ball of the Eye.

The Fourth Pair, or Pathetic,—have their origin the higheſt of the Cerebral Nerves, and are the moſt ſlender of the Body, being generally formed of one Faſciculus only on each ſide.

They ariſe by a ſingle, and ſometimes by a double root, behind the Teſtes, from the Medullary Expanſion which lies over the paſſage to the Fourth Ventricle, and which unites the Proceſſus ad Teſtes to each other.

They afterwards turn round the Crura Cerebri, and perforate the Dura Mater at the edges of the Tentorium, ſome way behind the entrance of the Third Pair.

They run afterwards along the Cavernous Sinuſes, at the outer ſide of the Third Pair, then croſs over that Pair, and paſſing out of the Cranium through the Foramina Lacera, they go obliquely over the Muſcles at the upper part of the Orbits, to be entirely diſperſed upon the Pathetic or Trochlearis Muſcles.

The Fifth Pair, or Par Trigeminum,—which are the largeſt Nerves of the Brain, ariſe, each by an anterior ſmall, and a poſterior large Portion, from the ſide of the Tuber Annulare, where the Crura Cerebelli join it.

They enter the Dura Mater a little below the Tentorium, over the points of the Partes Petroſæ of the Temporal Bones, and form a Plexus on each ſide, in which upwards of fifty Faſciculi have frequently been enumerated.

The Plexus ſinks cloſe by the outſide of the Cavernous Sinus, concealed by a doubling of the Dura Mater, and forms a Ganglion ſometimes called *Gaſſerian*, after GASSER, who, if not the Diſcoverer, was the firſt who illuſtrated it.

The Ganglion is of a ſemilunar form, and placed tranſverſely with reſpect to the Trunk of the Nerve.

From the oppoſite and curved edge of the Ganglion, three large Branches come out; the firſt and Anterior, termed *Ophthalmic*,—the ſecond and Middle, the *Superior Maxillary*,—and the third and Poſterior, the *Inferior Maxillary*.

The FIRST BRANCH of the FIFTH PAIR,—at the ſide of the Sella Turcica, is ſituated lower than the Third Pair, and afterwards croſſes over it, being previouſly connected by Nervous Matter to the Trunk of the Fourth Pair.

It goes through the Foramen Lacerum into the Orbit, and is there divided into the following Branches, viz.

The *Supra-Orbitar*, which is the largeſt of the whole, being a continuation of the Ophthalmic.

It paſſes immediately under the Membrane which lines the upper part of the Orbit, and ſplits into two Branches unequal ſize.

The ſmaller Branch, termed *Supra-trochlearis*, runs under the Superciliary Ridge to the Upper Eye-lid and Forehead.

The larger paſſes through the Foramen Supra-Orbitarium,—or over the Superciliary Ridge when the Foramen is awanting,—ſends Branches to the Upper Eye-lid, and divides into ſeveral others, which run back, partly above, but chiefly under the Frontal Muſcle, to ſupply the fore and upper part of the Head in general, while minute Fibres appear to penetrate the Bones.

The *Naſal Branch*, which runs obliquely over the Optic Nerve, where it detaches a Filament or two to the Eye, then under the Levator Muſcles of the Eye-lid and Eye; and, getting between the Abductor Oculi and Trochlearis, paſſes to the inſide of the Orbit.

It ſends a Branch, which, after entering the Foramen Orbitarium Internum Anterius, re-enters the Cavity of the Cranium, and gets upon the Cribriform Plate of the Œthmoid Bone.

From thence it paſſes down through one of the anterior Holes of this Plate, and ſends Twigs to the Membrane at the anterior part of the Noſtril, while the Nerve, deſcending at the fore-part of the Septum Narium, is diſperſed upon the Point and Wing of the Noſe.

The continuation of the Naſal Branch, now called *Infra-trochlearis*, paſſes forwards to the inner Corner of the Eye, and is diſtributed upon the Lacrymal Sac and parts adjacent.

The *Lacrymal Branch*, which runs along the Abductor Oculi Muſcle, ſends Twigs to the Membranes and Fat near it, likewiſe one or two through the Subſtance of the

Cheek-bone, and one in particular to the Subſtance of the Lacrymal Gland, while another paſſes over the Gland, and vaniſhes in the neighbouring parts.

A *Branch* to the Ophthalmic Ganglion, which is ſometimes ſent off from the Naſal, at other times from the Ophthalmic Trunk.

The *Ophthalmic Ganglion*,—termed alſo *Lenticular*, from its ſhape, is formed by this Branch from the Fifth, and by another from the Third Pair, and is commonly the ſmalleſt in the Body.

It is of an oblong form, and compreſſed; is ſituated at the outſide of the Optic Nerve a little before the Foramen Opticum, and is concealed in Fat. Sometimes, though rarely, the Filaments which form it take their origin entirely from the Third Pair.

From the Ganglion, about a dozen of Filaments ariſe, termed *Ciliary Nerves*, collected into two Portions, which creep along the oppoſite ſides of the Optic Nerve, ſeparated a little from each other, and running in company with the Ciliary Arteries.

Beſides the Ciliary Nerves from the Ganglion, one and ſometimes two Filaments ariſe from the Ramus Naſalis, and paſs along with the other Ciliary Branches.

The Ciliary Nerves, running with ſcarcely any diviſion, reach the back-part of the Eye, and, a little before the Inſertion of the Optic Nerve, enter the Sclerotic Coat, paſs obliquely through it, and, about the middle of the Ball, appear upon the Surface of the Tunica Choroides.

Upon this Coat, they run flat, and in a parallel direction,

tion, ſending very few evident Branches, either to it or to each other, till they reach the Ciliary Circle, where they divide into numerous minute Filaments.

Upon the Choroides, five or ſix are larger than the reſt, ſome being ſo minute as almoſt to eſcape the naked Eye.

At the Ciliary Circle, each commonly divides into two Branches, which are covered by the Cellular Subſtance of the Circle; and theſe, at the root of the Iris, are ſubdivided into ſtill ſmaller Branches, which run in a radiated and waving direction, the Ciliary Veſſels being interpoſed.

Near the Pupil, they are united into Arches, from which very minute Twigs run to the interior margin of the Iris.

The SECOND BRANCH, or SUPERIOR MAXILLARY NERVE,—is larger than the Ophthalmic, and is principally diſperſed upon the Parts belonging to the Upper Jaw, from which it has its name.

It goes through the Foramen Rotundum of the Sphenoid Bone, and at its exit divides into numerous Branches, viz.

The *Spheno-Palatine*, or *Lateral Naſal Nerve*, which ſends a reflected Branch through the Foramen Pterygoideum of the Sphenoid Bone, to join the Sympathetic Nerve in the Canalis Caroticus, and a Branch which enters the Foramen Innominatum of the Pars Petroſa, to join the Portio Dura of the Seventh Pair.

The Lateral Naſal Nerve goes afterwards into the Spheno-palatine Hole, to be diſperſed upon the under and back part of the Septum, and oppoſite ſide of the Noſe, and upon the Membrane of the Sphenoidal Sinus and Euſtachian Tube: One Branch in particular, after paſſing along the Septum, goes through the Foramen Inciſivum to the Roof of the Mouth.

The *Palato Maxillary*, or *Palatine Branch*, which deſcends through the Canal leading to the Foramen Palatinum Poſterius, and, running near the Alveoli with correſponding Blood-veſſels, ſends Branches to the Velum Palati and Roof of the Mouth, and minute Filaments which penetrate into the Palate-plate of the Superior Maxillary Bone.

Small Branches, which paſs round the Upper Jaw, and vaniſh in the Cheek.

A *Twig*, which goes through the Hole in the Os Malæ, along with a Branch of the Ocular Artery to the Face.

Small Filaments, which run down into the back-part of the Superior Maxillary Bone, and ſupply the Subſtance of the Upper Jaw, the large Dentes Molares, and Membrane lining the Antrum Maxillare.

The Second Part of the Fifth Pair, after ſending off theſe different Branches, goes into the Canal under the Orbit, and forms the Infra-orbitar Nerve, which, while in the Canal, gives off Filaments paſſing through minute Conduits in the Upper Jaw, to the Antrum, to the Subſtance of the Bone, to the ſmall Molares, Caninus, and Inciſores; and ſometimes a Twig, the companion of a ſmall Branch of the Internal Maxillary Artery, to the Membrane lining the Orbit.

The Infra-orbitar Nerve paſſes afterwards out of the Foramen Infra-orbitarium, and divides into many large Branches, to be diſtributed upon the Cheek, Under Eyelid, Upper Lip, and ſide of the Noſe.

The THIRD BRANCH, or INFERIOR MAXILLARY NERVE, goes through the Foramen Ovale of the Sphenoid Bone, and ſupplies the parts belonging to the Under Jaw, and the Muſcles ſituated between it and the Os Hyoides, by the following Branches, viz.

One or ſometimes two *Deep Temporal Branches*, to the inner part of the Temporal Muſcle.

Branches, to the Maſſeter, Pterygoideus, and Buccinator Muſcles.

A *Branch*, which paſſes behind the Cervix of the Lower Jaw, and gives off Filaments to the fore-part of the Ear, and afterwards accompanies the Temporal Artery upon the ſide of the Head, where it terminates.

A *Branch*, to the Buccinator Muſcle and other parts of the Cheek.

A Nerve of conſiderable ſize, termed *Lingual*, or *Guſtatorius*, which paſſes between the Pterygoid Muſcles, to the inner of which it gives ſome Filaments. It then ſends off, from its under ſide, a Ganglion which tranſmits Nerves to the Inferior Maxillary Gland.

The Lingual Nerve alſo tranſmits ſeveral Branches to the Sublingual Gland, and to the Muſcles of the Tongue.

It terminates, at length, near the Point of the Tongue, by many Branches which belong chiefly to the Papillæ; in conſequence of which, this Branch is conſidered as the principal Nerve of the Organ of Taſte.

The Trunk of the Inferior Maxillary Nerve, having parted with the Lingual Nerve, directs its courſe between the Pterygoid Muſcles to the Poſterior Foramen of the Inferior Maxillary Canal.

Before entering the Canal, it ſends off a long and ſlender Branch, which is lodged at firſt in a Furrow of the Bone, and goes afterwards to be diſperſed chiefly upon the Mylo-hyoideus Muſcle and Sublingual Gland.

The Trunk of the Nerve is afterwards conducted along the Canal of the Jaw under the Alveoli, where it diſtributes Filaments to the different Teeth of the correſponding ſide, and to the ſubſtance of the Bone; and coming out of the Canal by the Anterior Maxillary Foramen, ſomewhat diminiſhed in ſize, it ſcatters its remaining Branches upon the Chin and Under Lip.

The SIXTH PAIR, or ABDUCENTES, ariſe from the beginning of the Medulla Oblongata, at the part common to the Tuber Annulare and Corpora Pyramidalia, and are the ſmalleſt of the Cerebral Nerves, the Fourth Pair excepted.

They perforate the Dura Mater at the inner ſide of the entrance of the Fifth Pair, and run forwards within the Cells of the Cavernous Sinus; but ſo ſurrounded by Cellular Subſtance, as to ſeem to be protected from the Blood of that Receptacle.

While in the Sinus Cavernoſi, they are ſituated between the Ophthalmic Nerves and Carotid Arteries, upon the ſurface of the latter of which they ſend off two or three Filaments on each ſide of the Head, to aſſiſt in forming the Great Sympathetic Nerves.

The Trunks of the Sixth Pair afterwards go through the Foramina Lacera, to be diſperſed entirely upon the Abductor Muſcles of the Eyes.

The SEVENTH PAIR is compoſed, on each ſide, of two portions,—the *Nervus Auditorius, Nervus Acuſticus*, or *Portio Mollis*; and the *Communicans Faciei*, or *Portio Dura.*

The PORTIO MOLLIS is the ſofteſt of the Nerves, excepting the Olfactory.

It ariſes by tranſverſe Medullary Striæ from the anterior part of the Fourth Ventricle, and is ſeparated from its fellow of the oppoſite ſide only by the Crena of the Calamus Scriptorius.

The Striæ, turning round the Medulla Oblongata, apply themſelves to the Tuber Annulare, from which they receive an addition of ſubſtance, and then get to the ſide of the Portio Dura.

The PORTIO DURA, ſometimes alſo called *Sympatheticus Minor*, ariſes from that part of the Brain which is common to the Pons VAROLII, Crura Cerebelli, and Medulla Oblongata; and, at its origin, is ſituated upon the inner ſide of the Portio Mollis.

Between the origin of the Portio Dura and Trunk of the Portio Mollis, a ſmall Nerve ariſes, termed by WRISBERG, *Portio Media inter Portionem Duram et Portionem Mollem.*

It comes off by minute Fibrillæ, which ſoon unite into a Trunk, from the poſterior part of the Pons VAROLII, or from the adjoining part of the Medulla Oblongata, and is an Acceſſory Nerve of the Portio Dura.

The Portio Dura, conſiderably ſmaller than the Portio Mollis, gets into the Meatus Auditorius Internus, and is there lodged in a kind of half-ſheath, formed by that Nerve, to which it is connected by fine Cellular Subſtance; the Dura Mater, which lines the Paſſage, giving here a general Covering to both Nerves.

PORTIO MOLLIS.—The Portio Mollis is formed of two Faſciculi, nearly of equal ſize, one of which belongs to the Cochlea, the other to the Veſtible and Semicircular Canals.

Each of theſe Faſciculi paſſes by numberleſs Fibrillæ through the Cribriform Plate in the bottom of the Meatus Auditorius Internus, to the inner parts of the Labyrinth.

The Fibrillæ deſtined for the Cochlea go through the Holes in the ſides of the Modiolus.

Some paſs between the Plates which form the Septa of the Gyri; others go through Holes between the Oſſeous Plates of the Lamina Spiralis; but by much the greateſt number perforate the ſides of the Modiolus, between the Septum of the Gyri and the Lamina Spiralis.

The larger Fibrillæ run upon the Membrane covering the Lamina Spiralis; while the ſmaller go from the Modiolus, between the Oſſeous Septa and on the inner ſides of the Gyri, to be diſperſed upon the Membrane lining them.

The remaining Fibrillæ perforate the Plate common to the Modiolus and Infundibulum, and vaniſh upon the laſt half-turn of the Lamina Spiralis and the Cupola of the Cochlea.

Upon the Oſſeous part of the Lamina Spiralis, the

Nerves have the common appearance; but upon the Membranous Portion, they are of the colour of the Retina of the Eye.

In the whole of their courſe upon the Lamina Spiralis, they form a real Retina; though the reticulated ſtructure becomes much leſs apparent upon the outer part of this Lamina, and upon the continuation of the Membrane lining the Gyri,—the Nerves ſeeming to terminate in a ſemipellucid Pulpy Membrane reſembling the Retina of the Eye.

The Membrane upon which the Nerves are expanded, is but ſlightly connected to the Perioſteum which lines the inner ſide of the Cochlea, and which, though thin, may be readily perceived, being painted with Blood-veſſels;—nor does it differ from the Perioſteum lining the Tympanum.—See Dr Monro's *Treatiſe on the Ear.*

The Faſciculus which belongs to the Veſtible and Semicircular Canals, forms at firſt a Plexus, then a Gangliform Enlargement, previous to its entrance into the Labyrinth.

The Nerves which belong to the Veſtible and Semicircular Canals paſs through the Macula Cribroſa, or Holes ſubdivided into ſmaller Holes by Cribriform Plates in the bottom of the Meatus Auditorius Internus.

Of theſe Branches, ſmall Filaments paſs through the Macula Cribroſa in the Inferior Foſſula of the Meatus Auditorius Internus, to the Alveus Communis or Sacculus Veſtibuli.

A ſmall Branch goes through another Cribriform Hole in the Inferior Foſſula, to the Ampulla of the poſterior Membranaceous Semicircular Canal.

A Branch, larger than any of the former, enters the poſterior Hole in the upper Foſſula of the Meatus Internus, to be diſperſed upon the Ampullæ of the Superior and Exterior Membranaceous Canals.

The Nerves, after reaching the Sacculus Veſtibuli and the different Ampullæ, are ſpread out upon them, as in the Cochlea, in the form of a Net-work, the Fibres of which, by degrees becoming pellucid, diſappear upon the beginning of the Membranaceous Canals.

Portio Dura.—The Portio Dura ſeparates from the Portio Mollis, at the bottom of the Meatus Auditorius Internus, and enters the *Canalis* or *Aquæductus* Fallopii, by the anterior Hole in the upper Foſſula at the bottom of the Meatus.

After getting into the Canal, it receives the retrograde Nerve from the Second Branch of the Fifth Pair, which enters by the Foramen Innominatum on the fore-ſide of the Pars Petroſa.

It ſends Twigs through Foramina in the ſides of the Aqueduct, to the Maſtoid Cells and to the Muſcle of the Stapes.

A little before its exit from the Aqueduct in the Adult, but at the outer end of it in the Fœtus, it gives off a reflected Branch, termed *Chorda Tympani*, which paſſes between the long Proceſſes of the Malleus and Incus, and over the Membrana Tympani.

The Chorda Tympani goes afterwards in a Fiſſure at the outſide of the Euſtachian Tube, and joins the Lingual

Branch of the Fifth Pair, ſoon after that Nerve has got out of the Cranium.

In its paſſage, it ſupplies the Muſcles of the Malleus, and the Membranes, &c. of the Tympanum.

The Portio Dura afterwards paſſes out of the Aqueduct by the Foramen Stylo-maſtoideum, and is at firſt lodged deep, being ſituated in a Hollow behind the Parotid Gland.

Here it gives a ſmall Occipital Branch, which ſends Twigs to the back-part of the Ear, and terminates in the Oblique Muſcles of the Head.

It ſends a Branch to the Digaſtric, and another to the Stylo-hyoid Muſcle; gives off a Filament which joins the Auricular Branch of the Inferior Maxillary Nerve, and goes to the fore-part of the Ear; and is connected by another ſmall Filament at the under part of the Ear, with Branches of the Sympathetic Nerve which run along the External Carotid Artery.

It alſo furniſhes Filaments to the Parotid Gland, and then perforates it, dividing into large Branches, which join, ſeparate, and rejoin, different times, on the ſide of the Face.

This Plexus is expanded in ſuch a manner as to conſtitute what has been called by ſome the *Pes Anſerinus*, and is divided into the following Sets of Branches, viz.

The *Temporal Branches*, which aſcend upon the ſide of the Head, to be diſtributed upon the Temple; ſome running over, others under the Branches of the Temporal Artery, and forming ſeveral joinings with the Frontal Branches of the firſt part of the Fifth Pair of Nerves:

The *Superior Facial Branches*, which are diſperſed upon the Orbicularis Oculi Muſcle, and the Parts in general about the outer angle of the Eye, communicating in various places above and below the Orbit, with the firſt and ſecond Branches of the Fifth Pair:

The *Middle Facial Branch*, or the *Great Facial Nerve*, which runs acroſs the Maſſeter Muſcle, and divides into many Branches, to be diſperſed upon the Cheek, and ſide of the Noſe and Lips.

They are connected with the Branches of the Superior Facial, and near the corner of the Mouth, with others of the ſecond and third parts of the Fifth Pair. They have likewiſe ſome communications with deep Branches of theſe two Nerves, which paſs outwards between the Maſſeter and Buccinator Muſcles.

The *Inferior Facial Branches*, which proceed along the ſide of the Under Jaw, to be diſperſed upon the parts covering it, and upon the Under Lip; and connect themſelves with ſome of the Middle Facial Branches, and with others belonging to the third part of the Fifth Pair:

The *Deſcending*, or *Subcutaneous Cervical Branches*, ſome of which run forwards under the Lower Jaw, and others downwards, near the External Jugular Vein, to the Superficial Muſcles, and to the Integuments at the ſide and upper part of the Neck, where they form communications with the Inferior Facial Branches, and with different Branches of the upper Spinal Cervical Nerves.

The Eighth Pair ariſes from the Medulla Oblongata, at the ſides of the Baſes of the Corpora Olivaria, and conſiſt, in each ſide, of the Nervus Gloſſo-pharyngeus, and Pars Vaga

The GLOSSO-PHARYNGEUS is the ſmaller of the two, being only a little ſuperior in ſize to one of the Nerves of the Fourth Pair.

The PARS VAGA comes off immediately under the former, and is compoſed of ſeveral ſeparated Faſciculi, which are ſoon collected into a ſingle Cord.

The two Nerves, paſſing outwards, go through the Baſe of the Cranium, immediately before the end of the Lateral Sinus, by the Hole common to the Occipital and Temporal Bone, and are ſeparated from each other and from the Sinus by ſmall Proceſſes of the Dura Mater.

The *Gloſſo-Pharyngeus*, termed alſo *Lingualis Lateralis*, upon its exit from the Cranium, ſends a Branch backwards, which joins the Digaſtric Branch of the Portio Dura.

A little lower, it gives off Branches, which, with others from the Pharyngeal Branch of the Eighth Pair, and from the Great Sympathetic Nerve, form a Plexus which embraces the Internal Carotid Artery, and afterwards ſends Branches along the Carotis Communis to the Heart.

Still lower, it gives Branches which communicate with others belonging to the Pharyngeal Nerve, and go to the upper part of the Pharynx and to the Stylo-pharyngeus Muſcle.

The Gloſſo-Pharyngeus, after ſending a Twig or two to the Tonſil, to the upper part of the Pharynx, and Membrane of the Epiglottis, divides into many Branches, which run partly to the margin and partly to the middle of the root of the Tongue, ſupplying, eſpecially, the Papillæ Majores and the parts in their neighbourhood.

The *Pars Vaga,*—upon emerging from the Cranium, frequently becomes a little increaſed in diameter for about an inch downwards; forming what ſome authors have termed its *Gangliform Enlargement.*

It deſcends in the Neck at the outer and back part of the common Carotid Artery, to which it is cloſely united, being included along with it in the ſame common ſheath of Cellular Subſtance.

At the upper part of the Neck, it tranſmits a Branch, called *Pharyngeus,* to the Pharynx; and immediately afterwards, a large one, termed *Laryngeus Superior,* to the Larynx; and near the top of the Thorax, it ſends a Filament, and ſometimes two, to the Heart.

The *Pharyngeus,*—chiefly formed by the Pars Vaga, but partly alſo by a Branch from the Acceſſorius, is afterwards joined by Branches from the Gloſſo-Pharyngeus, and deſcends obliquely over the Internal Carotid Artery.

Near the origin of this Artery, it ſends Filaments which join others from the upper part of the Great Sympathetic, and creep along the Common Carotid.

Upon the middle of the Pharynx, it expands into a Gangliform Plexus, from which many ſmall Branches are ſent out, to be diſtributed upon the three Conſtrictors of the correſponding ſide of the Pharynx; one or two Filaments uniting above with the Gloſſo-Pharyngeus, and others below with the Laryngeus Superior.

The *Laryngeus Superior,*—deſcends obliquely forwards between the Carotid Arteries and Pharynx; and behind the origin of the Carotids, is divided into a large Internal or Superior, and a ſmall External or Inferior Branch.

The *Internal Branch* paſſes forwards between the Os Hyoides and Superior Cornu of the Thyroid Cartilage.

It divides into numerous Branches, ſome of which go to the Arytenoid Gland, and to the Oblique and Tranſverſe Arytenoid Muſcles, and others to the Glandular Membrane of the Epiglottis; while the greater number and the largeſt of theſe Branches are diſperſed upon the Glandular Membrane lining the upper portion of the Larynx and parts adjacent.

The *External Branch*,—which SCARPA conſiders as more properly termed *Pharyngo-Laryngeus*,—is originally compoſed of a Branch from the Internal Laryngeal, and another from the Great Sympathetic; and is connected by a Filament to the Pharyngeal, and ſometimes alſo by one to the Internal Laryngeal Nerve.

It imparts Twigs to the Middle and Lower Conſtrictors of the Pharynx, and afterwards terminates in the Thyroid Gland and inner part of the Larynx.

The *Filament*, ſent from the Pars Vaga at the bottom of the Neck, joins the Great Cardiac Branch of the Sympathetic Nerve in the upper part of the Thorax, to be diſperſed upon the Heart.

The NINTH PAIR,—frequently termed *Linguales*, and ſometimes *Linguales Medii*,—ariſe from the under and lateral parts of the Corpora Pyramidalia, on the fore-ſide of the Medulla Oblongata, by numerous Filaments which are collected into Faſciculi.

They paſs out at the Superior Condyloid Foramina of the Occipital Bone, after which they adhere, for ſome way, to the Eighth Pair, by Cellular Subſtance.

A little below the Cranium, each of the Trunks of this Pair of Nerves is conjoined by a croſs Branch with the Sub-occipital Nerve, or with an Arch which connects that Nerve and the Firſt Cervical together.

The Trunk then deſcends between the Internal Jugular Vein and Internal Carotid Artery, and at the root of the Occipital Artery croſſes over both Carotids to its place of deſtination.

Where it begins to croſs over the Carotids, it ſends down a Branch of conſiderable ſize, termed *Deſcendens Noni*.

The *Deſcendens Noni* paſſes down a certain length along with the common Carotid Artery, and, in its courſe, furniſhes Branches to the upper ends of the Omo-hyoid and Sterno-thyroid Muſcles, after which it unites with Branches from the Firſt and Second, and with ſmall Filaments from the Second and Third Cervical Nerves, forming an Arch, from which long and ſlender Twigs go to the under portions of the Sterno-Thyroid, and to the Omo-hyoid and Sterno-hyoid Muſcles.

The Ninth Pair paſſes afterwards behind the Facial and Temporal Veins, or the Trunk formed by theſe, and over the root of the Facial Artery,—ſending a Twig to the Hyo-thyroid Muſcle.

Upon the Hyo-gloſſus Muſcle, the Trunk of the Nerve is ſpread into many Branches, which go to the middle of the Tongue, and terminate chiefly in its Fleſhy parts; a Twig extending as far as the Genio-hyoid Muſcle, and two or ſometimes only one Filament anaſtomoſing with the Lingual Branch of the Fifth Pair.

The GREAT SYMPHATHETIC NERVE,—obtaining its name from its numerous Connections with moſt of the other Nerves of the Body,—is either formed originally by the reflected Branch from the ſecond of the Fifth Pair, and by one or two and ſometimes three ſmall Filaments ſent down from the Sixth Pair while in the Cavernous Sinus; or, according to the opinion of ſome Authors, the Sympathetic ſends off theſe ſmall Nerves to join the Fifth and Sixth Pairs.

Upon the Surface of the Internal Carotid Artery, while in the Carotic Canal, the Branches of the Fifth and Sixth Pairs and Great Sympathetic making this connection, are pulpy and tender, and form a Plexus which ſurrounds the Carotid, and from which the Trunk of the Sympathetic is moſt frequently conſidered as being ſent out.

After eſcaping from the Carotic Canal, the Trunk, which is of ſmall ſize, is cloſely connected, for a ſhort ſpace, with the Trunks of the Eighth and Ninth Pairs; and, ſeparating from theſe, it expands into a large Ganglion,—termed *Ganglion Cervicale Superius*,—of a long oval form, and ſituated oppoſite to the Second Cervical Vertebra.

From this Ganglion, the Nerve comes out very little increaſed in ſize,—and deſcends on the anterior Vertebral Muſcles of the Neck,—behind the Eighth Pair of Nerves, with which, and with the Carotid Artery, it is connected by a Sheath of Cellular Subſtance.

At the under part of the Neck, and nearly where the

Inferior Laryngeal Artery turns towards the Larynx, the Sympathetic forms another Ganglion, termed by ſome Authors *Cervicale Medium*, and by others *Cervicale Inferius*.

The Ganglion Medium is ſomewhat ſimilar in ſhape and ſize to the Ganglion Superius; though it varies conſiderably in theſe reſpects in different Subjects.

From this Ganglion, principal Branches are ſent down, one of which, larger than the reſt, and conſidered as the continuation of the Trunk, turns outwards between the Inferior Laryngeal and Vertebral Arteries to another Ganglion.

This third Ganglion,—is placed at the head of the firſt Rib, and is termed by ſome Authors *Ganglion Cervicale Inferius*, or *Imum*, while others conſider it as the firſt of the Thoracic Ganglia.

The Cervical part of the Great Sympathetic is connected with other Nerves, and diſperſed upon different parts, by the following Branches, viz.

One or two ſhort but thick Branches, which connect the beginning of the Superior Ganglion with the root of the Sub-occipital Nerve:

One or two Pulpy Nerves, which run forwards behind the Internal Carotid Artery, and divide into many others. Theſe, together with Filaments from the Gloſſo-pharyngeus, form a Plexus which ſends Branches to the Gangliform Expanſion of the Pharyngeus, and afterwards embraces the External Carotid Artery, ſending Plexuſes of Filaments along its different Branches:

One or two other ſoft Nerves, going behind the Internal Carotid, and with a Branch of the Laryngeus Internus of the Eighth Pair, forming the Laryngeus Externus:

Thick ſhort Roots connecting the Firſt, or Conjugation of the Firſt and Second Cervicals, with the ſuperior Ganglion of the Sympathetic Nerve.

From the Superior Ganglion, alſo, are ſent off ſmall Branches, which, uniting with Filaments from the Laryngeus Superior, form the *Ramus Cardiacus Supremus*, or *Superficialis Cordis*.

The *Superficial Cardiac Nerve* of the Sympathetic, in the Right Side, divides into Branches at the bottom of the Neck, which ſend a Filament or two along the Inferior Laryngeal Artery to the Thyroid Gland, and afterwards unite with the Superficial Cardiac Nerve of the Eighth Pair before the Subclavian Artery, and with the Laryngeal Nerve behind it.—In the left ſide, it terminates in the Cardiac Plexus of Nerves.

From the Second, Third, and Fourth Cervical Nerves, an equal number of Cords deſcend behind the Scaleni and Rectus Major Muſcle, to the middle Ganglion of the Great Sympathetic.

From the oppoſite ſide of the Ganglion, Branches are ſent down, which join and form the *Nervus Magnus Profundus*, others are fixed to the Superficial Cardiac and to the Recurrent of the Eighth Pair;—the reſt go partly over and partly behind the Subclavian Artery, to the Inferior Cervical, and to the firſt Thoracic Ganglion.

NERVI ACCESSORII AD PAR OCTAVUM.—The Acceſſory Nerves ariſe by ſmall Filaments from the lateral Parts of the Medulla Oblongata and upper portion of the Spinal Marrow.

The Filaments from the Spinal Marrow come off between the Anterior and Poſterior Bundles of the Cervical Nerves,—the firſt of them frequently extending as far as the Space between the Sixth and Seventh Pairs.

The different Filaments unite by degrees into their reſpective Trunks, and often have connections while within the Dura Mater, with one or two of the Bundles of the uppermoſt Spinal Nerves.

The Trunk of the Nerve paſſes out, in each ſide of the Cranium, in company with the Nerve of the Eighth Pair; but forms no part of that Nerve, being included in its own peculiar Sheath received from the Dura Mater.

After perforating the Cranium, it ſeparates from the Eighth, and deſcends obliquely outwards through the Sterno-maſtoid Muſcle to the Shoulder.

At its exit, it ſends off a Branch, termed by ſome *Ramus Minor*, (the Trunk itſelf being then called *Ramus Major)*, which aſſiſts in forming the Pharyngeal Nerve; and gives another, ſmaller than the former, to be connected to the Pars Vaga of the Eighth Pair.

At the fore-part of the Sterno-maſtoid Muſcle, it is joined by an Arch to the Sub-occipital, and frequently by another to the Firſt Cervical Nerve.

In its paſſage through the Sterno-maſtoideus, it ſends ſeveral Branches to the ſubſtance of that Muſcle, and terminates at length in the Trapezius.

SPINAL MARROW,

AND

ORIGIN OF THE SPINAL NERVES.

The Spinal Marrow is the continuation of the Medulla Oblongata, and obtains its name from being contained in the Oſſeous Canal of the Spine.

It is inveſted by the ſame Membranes which cover the Brain, and has an additional partial Involucrum from the Ligamentous Membrane which lines the Bodies of the Vertebræ, and which has been already taken notice of in the deſcription of the Ligaments.

On the inner ſide of the Ligamentous Lining, the Dura Mater is ſituated, which paſſes out of the Cranium by the Foramen Magnum Occipitis, and forms a Cylindrical Sheath which looſely envelopes the Spinal Marrow, and extends as far as the Os Sacrum.

It is more elaſtic than the Dura Mater of the Brain, and thereby admits more readily of the different motions of the Spine.

At its egreſs from the Cranium, it is intimately connected to the beginning of the above-mentioned common Ligamentous Lining, and is alſo united with the Pericranium at the edge of the Foramen Magnum of the Occipital Bone.

Below the Firſt Vertebra of the Neck, this intimate connection between the Dura Mater and inner Ligament of the Vertebræ is diſcontinued; a *Cellular*, *Fatty*, and *Slimy Subſtance*, which ſurrounds the Dura Mater throughout the reſt of the Canal, being interpoſed between that Membrane and the Ligament.

The Dura Mater is only in contact with the Tunica Arachnoidea, and this alſo only in contact with the Pia Mater, and lying ſo looſely over it as to be ſeparated from it with facility through the whole length of the Spine.

The Spinal Marrow, like the Brain, conſiſts of a Cortical and Medullary Subſtance, but differs in this reſpect, that the Cineritious Mater is placed within the other.

Upon the Surface of the Spinal Marrow, while lying in its natural ſituation, many tranſverſe Wrinkles or Folds are obſerved, which allow it to be extended in the motions of the Vertebræ.

It is a little flattened on its anterior and poſterior Surfaces, and is larger near the under part of the Neck, and at the top of the Loins where the great Nerves of the Extremities are ſent off, than in the other parts of the Spine.

It is divided into two lateral Portions or Cords, which are ſeparated from each other externally by an anterior and poſterior Fiſſure continued from the Medulla Oblongata; and each of the lateral Portions is in ſome meaſure ſubdivided by a ſuperficial Furrow into a large anterior and ſmall poſterior Cord.

The lateral Portions are firmly united together by fine Cellular Subſtance, but may be ſeparated from each other, before as well as behind,—without lacerating either,—to near their middle, where they are connected by a Layer of Cineritious Matter which paſſes from the one Cord into the other.

When the Medulla Spinalis is divided tranſverſely, the Cineritious Subſtance is obſerved to have a Cruciform appearance, correſponding with the Cords of which it is compoſed.

The Body of the Spinal Marrow deſcends as far as the Second Vertebra of the Loins, and terminates there by a Conical point, which is concealed by Faſciculi of Nerves.

Each of the lateral portions of the Spinal Marrow ſends off from its anterior and poſterior parts, flat Faſciculi of Nervous Filaments, which are placed oppoſite their Fellows on the other ſide.

Several of the Faſciculi of the Cervical Nerves detach Filaments to thoſe immediately above or below them; and the ſame thing is occaſionally obſerved of ſome of the Bundles of Dorſal Nerves.

The anterior and poſterior Faſciculi perforate the Dura Mater, from the inner part of which each Faſciculus is furniſhed with a proper Sheath, and is continued within it, the Sheaths connected by Cellular Subſtance only, till they get between the Vertebræ.

Between the anterior and poſterior Faſciculi of Spinal Nerves, and between the Tunica Arachnoidea and Pia Mater, a ſmall Ligamentous Cord, termed *Ligamentum Denticulatum*, is ſituated, which is attached to the Dura Mater, where that Membrane comes out from the Cranium, and accompanies the Spinal Marrow to its inferior extremity.

It adheres by Cellular Subſtance to the Pia Mater, and ſends off from its oppoſite ſide ſlender Cords, in the form of *Denticuli*, which carry the Tunica Arachnoidea along with them, and, running more or leſs in a tranſverſe direction, are fixed, each by minute Fibres to the Dura Mater, in the Interſtices of the Faſciculi.

The Ligamenta Denticulata of the right and left ſides incorporate with the Pia Mater at the inferior extremity or Conical point of the Spinal Marrow, and form a Ligamentous Filament which perforates the under end of the Dura Mater, and is fixed by ſmall Fibres to the Membranes covering the Os Coccygis, in the manner the Denticuli are fixed to the Dura Mater.

It is termed by ſome Authors *Ligamentum Piæ Matris*. It was conſidered by the Ancients as the *Fortieth Pair* of Nerves, and was alſo called *Nervus Imparus Sacrus*.

It aſſiſts in preventing the Spinal Marrow and the tender origin of the Nerves from being overſtretched.

Having got between the Vertebræ, each of the poſterior Bundles forms a Ganglion, from the oppoſite end of which a Nerve comes out, and is immediately joined by the anterior Bundle, thus conſtituting the beginnings of the Trunks of the Spinal Nerves.

The Nervous Cords ſent out from the Spinal Marrow, after receiving their coverings from the Dura Mater, become conſiderably larger than the Faſciculi which form them; as has been already obſerved in the general deſcription of the Nerves.

As ſoon as the Spinal Nerves emerge from between the Vertebræ, each ſends Branches backwards to the Muſcles near the Spine, and others forwards to join the Great Sympathetic Nerve, while the Trunk is continued outwards to its place of deſtination.

The Spinal Nerves are diſtinguiſhed on each ſide, by numbers, according to the Bones under which they paſs; *Thirty Pairs* are moſt commonly enumerated —One going under the Head, and termed *Sub-occipital*;—Seven paſſing under the Vertebræ of the Neck;—Twelve under the Dorſal;—Five under the Lumbar Vertebræ; and—Five under the pieces which originally compoſed the Os Sacrum.

The Faſciculi which form the Cervical Nerves are ſhort, running nearly in a ſtraight direction from their origin to the Intervertebral Holes. Thoſe which form the Dorſal Nerves are longer than the former, and run more obliquely downwards; and thoſe which form the Lumbar and Sacral Nerves are very long, and run ſtill more obliquely downwards, till at length the undermoſt of them become nearly longitudinal.

The ſize of the Faſciculi correſponds with that of the Nerves which they go to form.—The Faſciculi of the four loweſt Cervical and Firſt Dorſal, are large and broad, giving origin to the Great Nerves which ſupply the Superior Extremity.—Thoſe of the Back are much more ſlender, while the Faſciculi of the Loins and the two upper Sacral ones are of great ſize, to form the very large Nerves which run to the Lower Extremity.

The Lumbar and Sacral Faſciculi, while included in the Dura Mater, form a Bundle of Cords, termed *Cauda Equina*, from the reſemblance it has to the Tail of a Horſe; eſpecially when the Fibrillæ of the Nerves are unravelled by ſeparating them from each other.

The Faſciculi perforate the Dura Mater, nearly oppoſite to the parts where they paſs through the Vertebræ,—of courſe the Nerves of the inferior parts of the Spinal Marrow emerge from the Spine, conſiderably lower than their different origins.

BLOOD-VESSELS OF THE SPINAL MARROW.—The Arteries of the Spinal Marrow conſiſt of Anterior and Poſterior Spinal Arteries, and of many additional Branches communicating with others from the adjacent Veſſels.

The *Anterior Spinal Arteries* ariſe, one on each ſide, from the Vertebrals, near where theſe join to form the Baſilar Artery.

Upon the beginning of the Spinal Marrow, they generally unite into a common Trunk, which deſcends in that depreſſion on the Anterior Surface of the Medulla, whereby it is diſtinguiſhed into two Lateral Portions,—and the Artery continues nearly of the ſame ſize throughout, in conſequence of additions it receives from the neighbouring Arteries.

In the Neck, it communicates with the Vertebral, Thyroid, and Cervical Arteries, by Branches which paſs through the ſame Holes with the Nerves.

In the Back, it receives Branches from the Intercoſtal, and in the Loins from the Lumbar Arteries; all of which alſo go through the Intervertebral Holes.

It terminates at the under end of the Spinal Marrow; the Cauda Equina being ſupplied by Branches from the Internal Iliac Artery, which enter through the anterior and poſterior Holes of the Os Sacrum.

The *Poſterior Spinal Arteries*,--ariſe commonly from the Inferior Arteries of the Cerebellum, and frequently from the Trunks of the Vertebral Arteries within the Cranium.

They are equal in length to the former Artery, but conſiderably inferior to it in ſize, and continue ſeparate through the whole of their courſe.

They have conſtantly a Serpentine appearance, and form frequent Inoſculations with each other, and with Arteries the Branches of which communicate with the anterior Spinal Artery.

The Arteries of the Spinal Marrow are divided into minute Branches, which are diſperſed upon its ſubſtance, upon the Membranes which incloſe it, and alſo upon the ſubſtance of the Vertebræ and origins of the Nerves.

The *Veins* of the Spinal Marrow accompany their Arteries, and afterwards terminate in the Sinus Venoſi of the Spine.

The *Sinus Venoſi* conſiſt of one on each ſide, which runs exterior to the Dura Mater, being chiefly lodged in the Ligamentous Membrane which lines the fore and lateral parts of the Vertebral Canal.

They extend from the Foramen Magnum of the Occipital Bone, to the under end of the Os Sacrum, and are ſo irregular on their ſurface, and ſo much divided and ſubdivided within by the openings of Veins, as in many parts to have the appearance of Cells.

At the different Vertebræ, they are conjoined by croſs Branches, which have a Semilunar form, like the ſurface of the Bones which ſurround them.

They communicate at their ſuperior extremity with the Occipital and Lateral Sinuſes, and ſend numberleſs Branches outwards, which open into the Veins, the Arteries of which anaſtomoſe with thoſe of the Spinal Marrow.

NERVES OF THE NECK AND SUPERIOR EXTREMITY.

NERVUS ACCESSORIUS.—The Acceſſory Nerve belongs in ſome reſpects to this Claſs of Nerves; but having part of its origin within the Head, and from its paſſing out with one of the Cerebral Nerves, it has been already deſcribed along with theſe.

SUB-OCCIPITAL NERVES.—Theſe were formerly called *Tenth Pair of the Head,* and by many at preſent are termed *Firſt of the Neck.*

They ariſe, on each ſide, from the beginning of the Spinal Marrow, by an Anterior and Poſterior Faſciculus, like the reſt of the Spinal Nerves; and, like theſe alſo, they have their Ganglia where they paſs out between the Bones.

They perforate the Dura Mater immediately under the entrance of the Vertebral Arteries, and go forwards under them, and over the tranſverſe Proceſſes of the Atlas.

They afterwards appear in the fore-part of the Neck, and are each connected above by an *Arch* to the root of the Ninth Pair, and below by a ſimilar Arch to the firſt Cervical Nerve.

Anteriorly, they are joined by one or two ſhort Branches to the upper Ganglia of the Great Sympathetic Nerve.

They afterwards divide into Branches, which are diſtributed upon the Recti and Obliqui Capitis, and upon ſome of the Deep Extenſor Muſcles of the Head.

The First Cervical Nerve,—comes out, on each ſide, between the Atlas and Second Vertebra of the Neck, and immediately ſplits into two parts; the firſt of which paſſes forwards under the tranſverſe Proceſs of the Atlas, and is joined by an Arch with the Nervus Acceſſorius, and by Branches with the Ninth Pair: It is alſo connected by a ſoft Gangliform pellucid Root with the upper Ganglion of the Sympathetic Nerve, ſending a Branch downwards, to be fixed to the ſecond Cervical Nerve, and alſo ſmall Branches to the Muſcles connected with the fore-part of the Vertebræ.

The other, which is the principal part, goes backwards, and, after ſending Branches to the Extenſor Muſcles of the Head and Neck, perforates theſe, and forms the *Proper Occipital Nerve.*

The *Occipital Nerve* aſcends upon the Head with the Artery of that name, and terminates upon the Muſcles and Integuments on the upper and back part of the Head; ſome of its Filaments anaſtomoſing with others belonging to the Firſt Branch of the Fifth, and Portio Dura of the Seventh Pair.

The Second Cervical Nerve,—after eſcaping from between the Bones, gives off a Branch, which perforates the Muſcles connected to the fore and lateral parts of the Vertebræ, and joins the middle Ganglion of the Sympathetic Nerve.

It ſends another *Branch* of conſiderable ſize downwards to the Trunk of the Third Pair.

It ſends ſeveral Branches to the Sterno-maſtoid Muſcle, behind which it is connected by an *Arch*, and ſtill farther out by a *Filament*, with the Nervus Acceſſorius.

It is afterwards divided into ſeveral Branches, one of which paſſes downwards ſome way upon the External Jugular Vein, and, together with a Branch from the Firſt Cervical, forms an Arch with the Deſcendens of the Ninth Pair.

It gives off a ſmall Root, which is united with others in the formation of the Diaphragmatic Nerve.

A *Large Branch* comes out from it behind the Sterno-maſtoideus, which, turning over this Muſcle, ſends off the following Nerves, viz.

The *Inferior Cutaneous Nerve of the Neck*, which paſſes forwards to the parts under the Lower Jaw:

The *Middle Cutaneous Nerve*, which runs towards the Angle of the Jaw:

The *Great Poſterior Auricular Nerve*, which furniſhes an anterior Branch to the under part of the Ear, and a poſterior Branch dividing into many others which go to the back-part of the Ear and Temple.

The Cutaneous and Auricular Nerves are diſperſed upon the Platyſma Myoides, Integuments of the ſide of the Neck and Head, the Parotid Gland, and External Ear; and have ſeveral Communications with the Portio Dura of the Seventh Pair.

The remainder of the Second Cervical is diſtributed upon the Levator Scapulæ, and the Extenſor Muſcles of the Neck and Head.

The THIRD CERVICAL NERVE,—after emerging from between the Vertebræ, ſends down a Branch to the Trunk of the Fourth Cervical, and another Branch which forms the principal root of the Diaphragmatic Nerve.

A *Third Branch* perforates the Muſcles on the ſide of the Vertebræ, and joins the middle Ganglion of the Sympathetic Nerve.

A *Small Filament* connects the Third Cervical with the Deſcendens of the Ninth Pair.

The Nerve is afterwards divided into External and Internal Branches.

The *External Branches* form Anaſtomoſes with the Nervus Acceſſorius, near the upper part of the Scapula; while the Internal, after furniſhing Twigs to the Jugular Glands, are diſperſed by ſeveral large Branches upon the Muſcles and Integuments at the under part of the Neck, and upper part of the Shoulder.

The FOURTH CERVICAL,—ſends a Branch behind the

Muſcles ſituated on the fore and lateral parts of the Cervical Vertebræ, to the middle Ganglion of the Sympathetic Nerve.

It is connected by one, and ſometimes by two, Filaments to the Diaphragmatic Nerve.

It gives Twigs to the Jugular Glands and deep Muſcles of the Neck, and at the outer edge of the anterior Scalenus, joins the Fifth Cervical Nerve.

The FIFTH CERVICAL,—is united with the Fourth into a Common Trunk, which, after running a little farther out, joins the Sixth Cervical Nerve.

The SIXTH CERVICAL,—joins the Seventh behind the Clavicle; and to the Seventh, the Firſt Dorſal Nerve is added over the Firſt Rib.

The Four Inferior Cervicals and Firſt Dorſal Nerve are of great ſize,—eſpecially the three intermediate Nerves.

They paſs out between the Scalenus Anticus and Medius,—and afterwards run between the Subclavian Muſcle and Firſt Rib, at the outer ſide of the Subclavian Artery, to the Axilla.

In the Axilla, they ſeparate, unite, and ſeparate again, forming an irregular Plexus, termed *Axillary* or *Brachial*,—which ſurrounds the Axillary Artery.

The *Axillary Plexus* ſends Branches to the Subſcapularis, Teres Major, and Latiſſimus Dorſi, and furniſhes the External Thoracic Nerves which accompany the Blood-veſſels of that name to the Pectoral Muſcles and Integuments.

The Plexus afterwards divides into Nerves, moſt of which are of great ſize, to ſupply the Superior Extremity.—They are as follow.

The Scapularis,—which commonly ariſes from the combination of the Fourth and Fifth Pairs, and extending outwards, runs through the Semilunar Arch in the upper edge of the Scapula, afterwards deſcending between the root of the Spine and Head of the Scapula.

It furniſhes *Branches* to the Supra-Spinatus, and is ultimately conſumed upon the Infra-Spinatus Muſcle.

The Articularis,—which ariſes, like the former Nerve, from the Trunk common to the Fourth and Fifth Cervicals.

It ſinks deep in the Axilla, and getting between the under edge of the Subſcapularis, and Inſertions of the Teres Major and Latiſſimus Dorſi, it follows the courſe of the Poſterior Circumflex Artery round the Body of the Os Humeri, immediately below the Articulation.

It ſends *Branches* to the Teres Minor, and ſome *Twigs* to the Ligament of the Joint; but is chiefly diſperſed upon the Deltoid Muſcle.

The Nervus Cutaneus,—which ariſes from the Trunk common to the laſt Cervical and Firſt Dorſal Nerve; but is principally formed by Fibrillæ from the latter.

It runs down at the inner and fore part of the Arm, near the Radial Nerve.

It ſometimes gives a *ſmall Branch* to the upper part of the Coraco-brachialis and Biceps; and, farther down, it gives others to the Integuments and Coats of the Blood-veſſels.

About the middle of the Arm, it ſplits into two Branches, an Internal and External.

The *Internal Branch*, which is rather the ſmaller of the two, paſſes before the Baſilic Vein to the inner part of the Elbow, where it divides into Branches, two of which, larger than the reſt, turn obliquely over the Heads of the Flexors of the Hand, to be diſperſed upon the inner and back part of the Fore-arm.

The *External Branch* divides into ſeveral others, behind the Median Baſilic Vein, which deſcend on the anterior and Ulnar ſide of the Fore-arm, as far as the Wriſt.

They paſs partly over and partly under the Subcutaneous Veſſels; furniſhing Twigs to theſe, and vaniſhing in the Integuments.

Beſides the Nervus Cutaneus, there is another termed *Cutaneus Minor Internus* of WRISBERG, which, like the reſt of the Nerves of the Superior Extremity, takes its origin from the Axillary Plexus; but is more particularly connected with the Ulnar Nerve.—It is conſiderably inferior in ſize to the Nervus Cutaneus.

It ſoon ſeparates from the Ulnar, running afterwards between it and the inner ſide of Arm.

A little below the Axilla, it ſplits into two Branches:

The ſmaller, turning to the poſterior part of the Arm, is divided into Filaments which are chiefly diſperſed upon the Triceps and its Integuments.

The larger Branch deſcends at the inner edge of the Triceps, and vaniſhes upon the under end of that Muſcle and Skin of the Elbow.

The MUSCULO-CUTANEUS, called alſo *Perforans* CASErii,—which conſiſts of Fibrillæ from almoſt all the Nerves entering the Plexus.

The Cord formed by theſe perforates, obliquely, the upper part of the Coraco-brachialis, to which it gives Branches.

It afterwards paſſes between the Biceps and Brachialis Internus, furniſhing Branches to both.

At the Elbow, it gets to the outſide of the Tendon of the Biceps, and runs behind the Median Cephalic Vein.

From thence it deſcends in the Fore-arm, between the Supinator Longus and Integuments; furniſhing Branches to the latter, as far as the root of the Thumb and back of the Hand.

The Spiral, or Spiral-Muscular Nerve,—which is apparently formed by all the Nerves entering into the Axillary Plexus, and when the Sheaths of the Nerves are ſlit open, is found to be compoſed of Fibrillæ from each of the Trunks, excepting from that of the Firſt Dorſal.

It is rather larger than any other Nerve of the Superior Extremity, and is diſtinguiſhed by its Spiral direction.

It is at firſt ſituated between the Axillary Artery and the Ulnar Nerve, and paſſes obliquely downwards between the two Heads of the Triceps Extenſor Cubiti, and afterwards behind the Os Humeri, to the outſide of the Elbow.

From thence it proceeds among the Muſcles of the Radial ſide of the Fore-arm, as far as the Hand.

While paſſing behind the Os Humeri, it gives ſeveral Branches of conſiderable ſize to the different Heads of the Triceps; ſome of them accompanying the Branches of the

Arteria Spiralis, and terminating on the Heads of the Extenſors of the Hand.

Immediately behind the Body of the Os Humeri, it tranſmits a *Subcutaneous Branch*, which is diſtributed upon the Muſcles and Integuments on the poſterior part of the Fore-arm, anaſtomoſing at laſt with the Nerves on the back-part of the Hand.

The Trunk of the Nerve having arrived at the Elbow, is lodged in a Fiſſure between the Brachialis Internus and Radial Extenſors of the Carpus, and there gives off other Branches to the Extenſors of the Hand, and to the Supinator Muſcles.

At the Head of the Radius, the Trunk of the Nerve divides into two nearly equal Branches,—the *Superficialis* and *Profundus*.

The *Superficialis*, continued almoſt ſtraight from the Trunk, immediately tranſmits a Branch to the Extenſores Radiales and Supinator Longus, and then deſcends at the inner edge of this Muſcle along with the Radial Artery.

A little below the middle of the Radius, it croſſes between the Tendons of the Supinator and Extenſores Radiales, and is ſubdivided into a Volar and Dorſal Branch.

The *Volar Branch*, after ſending Twigs to the Annular Ligament, is diſtributed to the Muſcles and Integuments of the Thumb.

The *Dorſal Branch* is again ſubdivided into numerous other Branches, ſome of which go to the Muſcles in the interval of the Metacarpal Bones of the Thumb and Fore-finger, a few Filaments being diſtributed to the Annular Ligament, while principal Branches run one along each ſide of the Fore and Mid-finger, and likewiſe along the Radial ſide of the Ring-finger.

The *Ramus Profundus*, after ſending ſeveral Branches to the Extenſores Radiales and Supinator Brevis, perforates the latter, and gets to the back-part of the Fore-arm.

After quitting the Supinator, it deſcends under the Extenſor Primi Internodii Pollicis and Extenſor Digitorum to the back of the Hand.

In this courſe, it ſends Branches to the different Extenſores of the Thumb and Fingers, and at length degenerates into a ſlender Branch, which, at the Wriſt, adheres cloſely to the Annular Ligament, where it has a Gangliform appearance, and is diſperſed partly upon this Ligament, and partly on the Membranes and Muſcles on the back of the Metacarpus.

The MEDIAN OR RADIAL NERVE,—which comes from the middle and lower part of the Plexus, is formed by Faſciculi from all the Nerves which enter the Plexus, and is nearly of a ſimilar ſize with the Spiral Nerve.

It deſcends in the Arm along the anterior ſurface of the Humeral Artery, to which, and to the Deep Veins, it adheres cloſely by Cellular Subſtance.

In this courſe, it does not give off any conſiderable Branches;—Twigs, however, are ſent from it to the Coats of the Adjacent Veſſels.

At the bending of the Elbow, it ſlips over the Tendon of the Brachialis Internus, and perforates the back-part of the Pronator Teres Muſcle.

It afterwards deſcends between the Flexor Radialis and Muſculus Sublimis, and goes in the middle of the interval of the Radial and Ulnar Artery in its way to the Hand.

When it approaches the Fore-arm, it tranſmits Branches to the Pronator Teres and Integuments near that Muſcle.

In the Flexure of the Arm, it furniſhes Branches to the Pronator, Flexor Radialis, and Flexor Sublimis, and an Interoſſeous Branch, which, in ſome Subjects, receives an addition from the Spiral Nerve.

The *Interoſſeous Nerve* gives Branches to the Flexor Longus Pollicis, and to the Flexor Profundus Digitorum, deſcends upon the Interoſſeous Ligament with the Veſſels of that name, and terminates in the Pronator Quadratus.

Near the Hand, it ſends a Branch, dividing into others which ſupply the Muſcles and Integuments forming the Ball of the Thumb.

The Trunk of the Nerve, having given Branches to the Fore-arm, paſſes under the Annular Ligament of the Wriſt, where it divides into Branches which are ſituated behind the Aponeuroſis Palmaris, and Superficial Arch of the Arteries.

The principal Branches in the Palm come off in three diviſions, from which ſeven Nerves of conſiderable ſize are diſtributed to the Thumb and Fingers. Of theſe, two go to the Thumb, and one to the Radial ſide of the Fore-finger; the reſt come off from two-forked Trunks, near the Heads of the Metacarpal Bones, and ſupply the adjacent ſides of the Fore and Middle, and of the Middle and Ring-finger.

Theſe Branches ſend Twigs through the Aponeuroſis to the Integuments of the Palm, and others to the Muſculi Lumbricales; after which they accompany the Arteries ſent out from the Superficial Palmar Arch, beſtowing Twigs to the adjacent parts of the Fingers, at the points of which they terminate, by numerous Fibres.

The ULNAR NERVE,—which, like the former, is of great ſize, comes off chiefly from the laſt Cervical and Firſt Dorſal Nerve.

It extends along the inſide of the Triceps, frequently perforating ſome of its Fleſhy Fibres, and, near the Elbow, ſlants a little backwards, to get into a Groove between the inner Condyle of the Os Humeri and Olecranon of the Ulna.

From thence it paſſes to the Fore-arm, where, after perforating the Heads of the Flexor Muſcles, it joins the Ulnar Artery a little below its origin, and accompanies that veſſel,—running behind it all the way to the Hand.

Under the Axilla, it ſometimes receives a Branch from the Spiral Nerve; and from this connection, or from the Trunk of the Ulnar Nerve itſelf, a Subcutaneous Branch is ſent off, which runs between the Triceps and Integuments, furniſhing Branches to the latter for a conſiderable way along the Fore-arm.

Near the under end of the Os Humeri a Twig or two commonly go the inner edge of the Triceps.

Under the bending of the Elbow, a Branch is given out to be diſtributed upon the Belly of the Flexor Ulnaris.

Immediately below the former, another Branch is produced,

duced, which is diſperſed upon the Flexor Profundus Digitorum.

About the middle of the Fore-arm, a Filament is tranſmitted which adheres to the Ulnar Artery, furniſhing ſmall Twigs to the Coats and Sheath of the Artery, and terminating in the correſponding parts of the Wriſt, and Integu- of the Palm.

Near the end of the Ulna, a conſiderable Branch, termed *Dorſalis*, is ſent out, which, turning between the Flexor Ulnaris and Ulna, is derected to the back-part of the Hand.

The *Dorſal Nerve* ſends Branches to the Integuments of the Wriſt and Metacarpus, which have various anaſtomoſes with others of the Spiral Nerve.

It ſends off a Branch which proceeds along the Ulnar ſide of the Little Finger;—and at the Heads of the Metacarpal Bones, another ſplitting into two Branches which run along the adjacent ſides of the Auricular and Ring-fingers.

The Trunk of the Nerve paſſes with the correſponding Artery over the Annular Ligament into the Palm, where, like the Radial Nerve, it is covered with the Aponeuroſis Palmaris.

In the Palm, it divides into Superficial and Deep Branches; the former deſtined chiefly for the Fingers, the latter for the deep region of the Hand.

The *Superficial Palmar Nerve* ſends—

Branches to the ſhort Muſcles of the Little Finger:

A Branch to the Volar-ulnar ſide of the Little Finger: and—

Another, which is ſoon ſplit into two ſmaller Branches; one to the Radial ſide of the Little Finger, the other to the Ulnar ſide of the Ring-finger.

The *Deep Palmar Nerve* ſinks in between the Abductor and Flexor Parvus Digiti Minimi, or perforates the Head of the latter, and forms an Arch which accompanies the Deep Arch of the Arteries, under the Tendon of the Flexors, and the Lumbricales Muſcles.

The Deep Nerve gives—

A Branch to the Abductor Minimi Digiti, and one to each of the Interoſſei:

A Twig to each of the Lumbricales, which enters from behind:

Branches to the Flexor Brevis and Adductor Pollicis.

The Nerve terminates at length by ſeveral ſhort Branches upon the Abductor Indicis Muſcle.

The Nerves on the Palm and correſponding part of the Fingers, like the Arteries, are much larger than thoſe of the oppoſite ſide of the Hand.

The Digital Nerves ſend off many lateral Branches to the Integuments and other parts of the Fingers, and terminate, each, by a Bruſh of Fibres, at the Apices of the Fingers.

Between the Branches of the Radial and Ulnar Nerve, different Anaſtomoſes are frequently found; and the ſame may be obſerved between the Nerves of the Palmar and Dorſal ſide of the Fingers.

INTERCOSTO-HUMERALES.—Beſides the Nerves of the Superior Extremity ſent from the Brachial Plexus, there are others belonging to it, which take their origin from the Intercoſtal Nerves, and which may therefore be termed *Intercoſto-Humerales*.

The *Intercoſto-Humeral Nerves*,—conſiſt of a Branch from the Second, and of another from the Third Intercoſtal Nerves, both of which paſs out at the fore and lateral parts of the Thorax, the one under the Second, and the other under the Third Rib.

The Firſt Nerve is joined by a ſmall Branch with the Cutaneous Nerve, or with the *Cutaneus Internus* of WRISBERG, and is afterwards diſperſed by numerous Filaments upon the Axillary Glands, and upon the Integuments of the Axilla and of the inner part of the Arm.

The Second Nerve is connected by one or more Branches with the Firſt, and ſends ſome Twigs to the Axillary Glands; but is chiefly diſtributed upon the Integuments of the back-part of the Arm, which it ſupplies with many Branches,—ſome of them extending as far as the Elbow.

NERVES

WITHIN

THE THORAX.

The Nerves, in each ſide of the Thorax, conſiſt of the *Phrenic*, the *Pars Vaga* of the Eighth Pair, the *Great Sympathetic*, and the *Intercoſtals*; all of which are covered and concealed by the Pleura, till they are expoſed by diſſection.

The Phrenic or Diaphragmatic Nerve,—has a ſmall Filament from the Second Cervical; but is chiefly formed by a Branch from the Third, and by one, and ſometimes by two, from the Fourth Cervical Nerve.

It deſcends in the Neck, along the outer and fore part of the Scalenus Anticus Muſcle, and enters the Thorax behind the anterior extremity of the Firſt Rib, between the Subclavian Artery and correſponding Vein.

In the Thorax, it paſſes over the root of the Lungs, and then proceeds along the Pericardium, to which it adheres cloſely in its way to the Diaphragm.

The Right Phrenic has nearly a ſtraight direction oppoſite to the Superior Cava and Right Auricle; while the left makes a conſiderable Curve near its under end, correſponding with that part of the Pericardium which covers the point of the Heart.

Upon the Surface of the Diaphragm, the Trunk is divided into ſeveral Branches, which are diſtributed in a radiated form upon the Fleſhy ſides of that Muſcle.

PARS VAGA.—The Pars Vaga, upon approaching the Thorax, ſends a Filament, and ſometimes two, termed *Cardiac Nerves*, which join the Cardiac Branch of the Great Sympathetic, as already obſerved.

It enters the Thorax between the Subclavian Vein and Artery, and, after giving off the Recurrent Nerve, paſſes behind the root of the Lungs.

RECURRENT NERVE.—The Recurrent,—is reflected upwards, behind the Subclavian Artery in the right, and behind the Arch of the Aorta in the left ſide of the Thorax; —in conſequence of which, the left Nerve is the longer of the two. It afterwards aſcends in the Neck, adhering to the poſterior and lateral part of the Trachea, in its way to the Larynx.

It is connected, near its origin, by one or two Branches of conſiderable ſize, with the adjacent Ganglia of the Great Sympathetic Nerve, and from the oppoſite ſide of its root it ſends other conſiderable Branches to join thoſe of the Eighth Pair, in the formation of the Anterior Pulmonary Plexus of Nerves.

Near the Subclavian Artery, it is connected by different Filaments to the Superficial and deep Cardiac Branches of the Sympathetic Nerve.

In its aſcent in the Neck, it tranſmits Pencils of Filaments, which penetrate the Trachea, and are diſperſed upon its Internal Membrane.

Behind the Thyroid Gland, it ſends off minute Fibres to the beginning of the Œſophagus and bottom of the Pharynx, and ſmall Twigs to the Gland itſelf.

Upon the inner ſide of the Thyroid Cartilage, it furniſhes a Branch which conſtitutes a remarkable Anaſtomoſis with another from the Internal Laryngeal Nerve.

At the back-part of the Larynx, it is divided into many Fibrillæ, which are diſtributed to the different Muſcles fixed to the Arytenoid Cartilage of the correſponding ſide.

It has alſo ſome connections, ſmaller than the one already mentioned, with Branches of the Internal Laryngeal Nerve, and ſends minute Fibrillæ to the Internal Membrane of the Larynx; from which circumſtance, the Recurrent Nerves are conſidered as the principal Inſtruments of the Organ of Voice.

The Pars Vaga, having tranſmitted the Recurrent Nerve, gives off Filaments which form connections with Branches ariſing from the root of the Recurrent of the ſame and of the oppoſite ſide.

They anaſtomoſe alſo by ſmall Fibrillæ with the Cardiac Branch of the Sympathetic, and then paſs to the forepart of the Bronchi, where they conſtitute what is termed the *Anterior Pulmonary Plexus* of Nerves.

The *Anterior Pulmonary Plexus*, thus formed by Branches from the Trunk of the Eighth Pair, with the aſſiſtance of others from the Recurrent and Sympathetic Nerves,—extends acroſs the great Branches of the Pulmonary Artery, and, after tranſmitting ſmall Filaments to the Pericardium and to the Great Cardiac Nerve, furniſhes many minute Fibrillæ, which accompany the Ramifications of the Bronchi and Pulmonary Blood-veſſels in the ſubſtance of the Lungs.

From the Pars Vaga, a little below the origin of the Recurrent, and likewiſe from the root of the Recurrent itſelf, Nerves are ſent off, which form a Plexus, to be diſperſed, partly upon the Fleſhy-glandular Subſtance of the Trachea, and partly embracing the Œſophagus, and forming upon it the *ſmall Eſophageal Plexus.*

Behind the root of the Lungs, about ſix or ſeven Nerves of different ſizes are ſent off in a tranſverſe direction, which are termed *Poſterior Pulmonary Plexus*, although they have few connections with each other.

The Poſterior Pulmonary Nerves, like the Anterior, follow the Branches of the Bronchi and Blood-veſſels in the ſubſtance of the Lungs, and, becoming gradually ſmaller, ſend off minute Twigs, which penetrate the Air-veſſels, and are ultimately diſperſed upon their Internal Membrane.

After giving out the Pulmonary Nerves, the Pars Vaga is ſplit into Cords, termed *Great Eſophageal Plexus*, which ſurrounds the Œſophagus, ſends Filaments into its Subſtance, and is joined by Funiculi of the Pars Vaga of the oppoſite ſide.—It goes afterwards through the Diaphragm, to be diſtributed upon the Viſcera of the Abdomen.

From the Ganglia of the Great Sympathetic Nerve, at the bottom of the Neck, and top of the Thorax, the principal *Cardiac Nerves* are produced, which are diſperſed upon the Heart; while the continuation of the Trunk of the Sympathetic deſcends in the Thorax at the ſide of the Vertebræ.

The CARDIAC NERVES of the RIGHT SIDE conſiſt of the *Cardiacus Magnus Profundus*, and *Cardiacus Minor*, the latter of which is termed by SCARPA *Cardiacus Aortæ Superficialis*.

The CARDIACUS MAGNUS PROFUNDUS,—is principally formed by Branches from the Second Cervical Ganglion of the Sympathetic, and afterwards receives one or two Filaments from the Cardiacus Supremus, together with the Superficial Cardiac and other Branches of the Eighth Pair, as formerly deſcribed.

The Trunk, ariſing in this manner from different ſources, paſſes between the Superior Cava and aſcending Aorta, to the Poſterior Surface of the latter, and joins the Cardiac Branches of the Left Side.

By the addition of the Left Cardiac Nerves, a Plexus is formed, termed *Plexus Cardiacus Magnus of* HALLER, from which is ſent out a long Ganglion of a ſoft conſiſtence, deſcribed by WRISBERG under the name of *Ganglion Cardiacum*.

From the Cardiac Ganglion, the following Branches are given off, viz.

A Branch which, after tranſmitting Filaments to the Anterior Pulmonary Plexus of the Eighth Pair, paſſes behind the Right Diviſion of the Pulmonary Artery to the Left Coronary Plexus of the Heart:

One or two Filaments, which unite with others ſent from the Anterior Pulmonary Plexus of the Eighth Pair, and go before the Right Branch of the Pulmonary Artery to the Baſe of the Heart:

Branches of conſiderable ſize, paſſing partly over the right ſide of the Aorta, and partly between it and the Pulmonary Artery to the Anterior Coronary Plexus:

Small Branches which unite with others coming from the Trunk of the Great Cardiac Nerve, and paſs over the Aorta to the Anterior Coronary Plexus.

The NERVUS CARDIACUS MINOR ariſes from the undermoſt Cervical Ganglion, creeps over the Arteria Innominata and Aorta, and terminates in a Plexus formed by the Cardiac Nerves on the left ſide of the Aorta Aſcendens.

The LEFT CARDIAC NERVES are, the *Cardiacus Superficialis*, and the *Cardiacus Magnus Profundus*.

The CARDIACUS SUPERFICIALIS ariſes from the upper part of the Sympathetic Nerve, as formerly noticed, and paſſes behind the Arch of the Aorta to the Plexus Cardiacus Magnus.

The CARDIACUS MAGNUS PROFUNDUS SINISTER, the upper portion of which is ſmaller than that of the right ſide, ariſes by numerous roots from the middle, and from the loweſt Ganglion of the Sympathetic Nerve.

It paſſes acroſs the Arch of the Aorta, and, after receiving the Cardiac Branch of the Eighth Pair, joins the Great Cardiac of the right ſide, to aſſiſt in forming the Cardiac Plexus.

From the Cardiac Plexus, a *Reticulum* of Nerves extends upon the left ſide of the aſcending Aorta, which receives the Cardiacus Minor, and a Filament or two from the Cardiacus Magnus of the right ſide, going over the Aorta.

From this Reticulum, the *Anterior* or *Right Coronary Plexus* is produced, which paſſes between the Pulmonary Artery and Aorta, and afterwards follows the courſe of the Trunk and Branches of the Right Coronary Artery, along with which it is diſperſed upon the correſponding ſide of the Heart.

The Great Cardiac Plexus, after ſending a Filament or two to the Lungs, gives off Nerves which unite, and form the *Trunk* of the Great Deep Cardiac Nerve of the left ſide, which has a ſoft Gangliform appearance, and paſſes along the correſponding ſide of the Pulmonary Artery.

Upon the Surface of this Artery, the Trunk ſoon divides into Branches, which, after ſending Filaments acroſs it to the right Coronary Plexus, give origin to the *Coronary Plexus* of the *left ſide*, which attends the Trunk and Branches of the Left Coronary Artery.

In the Left or Poſterior Coronary Plexus, the Nerves are larger than in the Right, correſponding with the parts they have to ſupply; and, in both, they have repeated connections with each other on the ſurface of the Heart.

In general, the Nerves run cloſe to the Arteries; ſome of them being continued as far as the Apex, while others penetrate the ſubſtance of the Heart.

The Great Sympathetic, having produced the Principal Cardiac Nerves, conſiſts of an anterior and poſterior part, —the former going over, and the latter under the Subclavian Artery.

Behind this Artery, the two parts unite into a Trunk, which deſcends in the Thorax over the heads of the Ribs.

At the Head of each Rib, it forms a ſmall Ganglion of an irregular ſhape, which unites behind with each of the Intercoſtal Nerves, generally by two, and ſometimes by three ſhort Branches.

From ſeveral of the Dorſal Ganglia of this Nerve, Filaments are detached obliquely over the Vertebræ to the Coats of the Aorta.

From the Sixth, Seventh, and Eighth Dorſal Ganglia, —and frequently from a Ganglion above or below theſe,—Branches ariſe, which deſcend obliquely upon the ſides of the Vertebræ, and unite into a Trunk, termed *Nervus Splanchnicus*,—which perforates the Appendix of the Diaphragm, and goes to the Viſcera of the Abdomen, from which circumſtance the Nerve obtains its name.

Beſides the Nervus Splanchnicus, another, termed *Splanchnicus Secundarius*, or *Acceſſorius*, is generally obſerved, which ariſes from one or two of the Dorſal Ganglia, below the origins of the Splanchnicus,—near its termination,—or runs ſeparate from it into the Abdomen.

The INTERCOSTAL, or COSTAL, or DORSAL NERVES, —after eſcaping from the Vertebræ,—run in the Furrows at the lower edges of the Ribs, in company with the Intercoſtal Blood-veſſels, and proceed to the anterior part of the Thorax, between the two Layers of Intercoſtal Muſcles.

Immediately after getting out from between the Vertebræ,

bræ, each is connected, as already taken notice of, by ſhort Branches to the Sympathetic Nerve.

Oppoſite to this connection, they give principal Branches, backwards, to the Muſcles lying near the Spine, and ſerving for the erection of the Trunk of the Body.

Through the reſt of their courſe, they give Branches to the Intercoſtal Muſcles, to the Muſcles and Integuments of the Thorax, and alſo to thoſe of the Abdomen, and, becoming gradually ſmaller, they at laſt vaniſh in the fore-part of the Body.

The Six Upper Intercoſtals ſend Branches to the numerous Muſcles, and to the Integuments, covering the back-part of the Thorax, to the Serratus Magnus, and to the upper part of the Abdominal Muſcles; while the remains of them, paſſing out between the Ribs at the edge of the Sternum, are reflected along with Branches of the Internal Mammary Blood-veſſels, to be diſperſed by ſmall Filaments upon the Mamma, and likewiſe upon the Muſcles and Integuments next the edge of the Sternum.

The Trunk of the Firſt Intercoſtal enters the compoſition of the Axillary Plexus;—a Branch of it, however, runs along the edge of the firſt Rib, in the manner the other Intercoſtals run along their reſpective Ribs.

Two Principal Branches,—one from the Second, and the other from the Third Intercoſtal,—are occupied in forming the Intercoſto-humeral Nerves, already deſcribed; while a conſiderable Branch from the Fourth is reflected over the edge of the Latiſſimus Dorſi to the Integuments of the back-part of the Thorax.

The Six Lower Intercoſtals, after ſupplying the adjacent Muſcles and Integuments of the Thorax, continue their courſe obliquely forwards, and are diſperſed upon the different Muſcles and Integuments of the Abdomen;—the Twelfth, running from the laſt Rib along the under end of the Abdomen, ſends Filaments which extend as far as the Skin of the Pelvis and Thigh.

NERVES

OF THE

CHYLOPOIETIC AND ASSISTANT CHYLOPOIETIC VISCERA.

THE NERVES of the Chylopoietic and Aſſiſtant Chylopoietic Viſcera, are formed by *Branches* of the *Par Vagum*, and the *Rami Splanchnici* of the *Great Sympathetic Pair;* all which, like the Blood-veſſels, are covered by the Peritonæum, in their courſe towards the Viſcera.

The PARS VAGA of the *Left Side*,—deſcending from the Great Œſophageal Plexus of the Eighth Pair, creeps along the fore-part of the Cardia, detaches Filaments to the Left Hepatic Plexus, and divides into many Branches which are diſtributed to the Upper and Left Portion of the Stomach.

The RIGHT PARS VAGA paſſes upon the poſterior part of the Cardia, and ſplits into two Faſciculi, one of which goes to the root of the Hepatic Plexus, and to the Cœliac Ganglion, while the other, which is the principal one, is diſperſed by numerous Branches upon the under and left portion of the Stomach.

The Nerves of the two Faſciculi have ſeveral connections with each other, about the Cardia, and along the ſmall Curvature of the Stomach, and form a Plexus, by ſome authors termed *Coronary*, from which Branches extend along the ſmall Curvature, as far as the Pylorus.

The RAMUS SPLANCHNICUS and SPLANCHNICUS SECUNDARIUS have their origins from the Sympathetics, and perforate the upper and lateral part of the inferior Muſcle of the Diaphragm,—as already mentioned in the Deſcription of the Nerves of the Thorax.

After entering the Abdomen, they expand their Fibres, and incorporate with the lateral part of the Great Semilunar Ganglion.

The SEMILUNAR GANGLION,—is formed by the Rami Splanchnici of the Right and Left Sympathetics, with the addition of the Branches from the Eighth Pair.

It is of a long curved ſhape, with the convex edge undermoſt, and is compoſed of many ſmaller Ganglia, termed *Cœliac*, which are of different ſize and of irregular forms.

The COELIAC GANGLIA are placed over the Aorta, about the roots of the Cœliac and Superior Meſenteric Arteries, and extend ſome way upon the Fleſhy Pillars of the Diaphragm.

From the Cœliac Ganglia innumerable Nerves iſſue on all ſides, forming a Plexus, termed by ſome authors *Solar*, which extends along the Trunks and Branches of the Cœliac and Superior Meſenteric Arteries.

The Nerves upon theſe Arteries are ſo intermixed with each other, and with Cellular Subſtance, as to form confuſed Webs; the name of *Plexus*, however, is ſtill retained, and the particular name of each Plexus is derived from the Artery which it ſurrounds, or the Viſcus to which it belongs.

The HEPATIC PLEXUS,—after giving Twigs to the Renal Glands, ſends Filaments to the Diaphragm, which accompany the Diaphragmatic Arteries, and anaſtomoſe with Branches of the Phrenic Nerves.

It afterwards divides into Right and Left Plexuſes, correſponding with the Right and Left Branches of the Hepatic Artery, or with the Right and Left Trunks, when ſuch are preſent.

The Left Hepatic Plexus furniſhes ſeveral Branches to the Stomach, which intermix with thoſe of the Eighth Pair, upon the ſmall Curvature.

The Right Hepatic Plexus imparts Branches to the correſponding part of the Pancreas, to the ſmall end of the Stomach and beginning of the Duodenum, and gives origin to the Right Gaſtro-epiploic Plexus, which attends the Artery of the ſame name, diſtributing its Filaments to the Great Curvature of the Stomach, and to the Omentum Majus.

The Hepatic Plexuſes ſurround the Hepatic Artery and Vena Portæ, and, after ſending ſeveral Filaments to the

Biliary Ducts and Gall-bladder, follow the Branches of the Blood-veſſels through the ſubſtance of the Liver.

The SPLENIC PLEXUS, compoſed of ſeveral ſmall Filaments, ſurrounds the Splenic Artery, gives Twigs to the Pancreas, and then accompanies the Veſſels into the Spleen.

The SUPERIOR MESENTERIC PLEXUS forms a Vagina, which ſurrounds, and in a great part conceals the Trunk of the correſponding Artery.

From this Plexus, numberleſs Filaments are produced,—many of them extremely minute,—which run through the Meſentery, partly with the Blood-veſſels, and partly at a diſtance from them; and which, after ſupplying the Coats of the Veſſels and Meſenteric Glands, are diſtributed to the ſmall Inteſtines in general, and to the Right Portion of the Colon.

The Nerves of the Colon are, in proportion to the part they have to ſupply, larger than thoſe of the Small Inteſtines, and in ſeveral places form Arches, which are ſituated at the ſides of the Arteries.

The Cœliac Ganglia ſend down, along the Aorta, a Vagina ſimilar to that ſurrounding the Superior Meſenteric Artery, which is joined by other Nerves from the Trunk of the Sympathetic continued along the Lumbar Vertebræ.

From the Aortic Vagina or Plexus, a Proceſs is ſent off, termed INFERIOR MESENTERIC PLEXUS, which ſurrounds the Trunk of the Inferior Meſenteric Artery, and follows it to the Left Portion of the Colon, and to the Rectum ;—the Nervous Filaments forming Arches in ſeveral places, as in the Superior Meſenteric Plexus.

The Aortic Plexus, receiving freſh ſupplies from the Trunks of the Sympathetics, ſends down a Plexus, commonly termed *Hypogaſtric*, which paſſes over the end of the Aorta, and, upon the laſt Lumbar Vertebra, ſplits into right and left portions, which deſcend to the Viſcera contained in the Pelvis.

NERVES

OF THE

ORGANS OF URINE AND GENERATION.

The Nerves of the Organs of Urine and Generation conſiſt of the *Renal* and *Hypogaſtric Plexus*, and of the *Spermatic* and *Pudic Branches*.

The Renal Plexus is compoſed of Nerves ſent from the Cœliac Ganglia, joined by ſome others derived from one or two of the Ganglia of the Sympathetic Nerve in the bottom of the Thorax.

It is interſperſed, at its beginning, with ſmall Ganglia, termed *Renal*, and is afterwards divided into Anterior and Poſterior Plexuſes, which extend along the correſponding

Surfaces of the Renal Artery, accompanying its Branches in the Subſtance of the Kidney.

From the Renal Plexus, ſmall Nervous Twigs aſcend to the Renal Gland, which is furniſhed with others from the Cœliac Ganglia and root of the Hepatic Plexus.

The Renal Plexus alſo ſends down Filaments to ſupply the upper portion of the Ureter,—the under receiving Nerves from the Hypogaſtric Plexus.

The HYPOGASTRIC PLEXUS, the origin and courſe of which have been already mentioned, is connected by different Nerves to the adjacent Trunks of the Great Sympathetic and Sacral Nerves, and ſends many Branches to the Rectum, Bladder, and Spermatic Veſſels in the Male; and to the Rectum, Bladder, Uterus, and Vagina in the Female.—The Nerves of the Uterus are proportionally ſmall. They paſs into its ſubſtance at the Cervix, and follow the courſe of the Blood-veſſels.

SPERMATIC NERVES.—The Spermatic Nerves are very minute;—they conſiſt of a Superior or Internal, and of an Inferior or External Set of Capillary Branches.

The former are derived from the Renal and Aortic Plexus, and accompany the Spermatic Blood-veſſels in their courſe through the Abdomen, and afterwards to the Teſticle.

The latter are ſent off from a Branch of the Second Lumbar Nerve, which, running near the Spermatic Veſſels, detaches a Filament, which, in the Male, goes in the Spermatic Cord towards the Teſticle, but is more particularly diſperſed upon the Cremaſter Muſcle. In the Female,

male, Filaments are reflected from it along the Ligamentum Rotundum to the Uterus.

NERVI PUDICI.—The Nervi Pudici ariſe in two Faſciculi,—a *Superior* and *Inferior*,—which are formed by Fibrillæ from all the Cords entering the compoſition of the Sciatic Nerve.

The Superior Faſciculus is formed, more particularly, by Threads from the two under Lumbar and two upper Sacral Nerves;—the Inferior is compoſed of a ſmall Cord from the Second, and a large one from the Third Sacral.

The Faſciculi paſs through the under part of the Notch of the Os Ilium, and afterwards between the Sacro-ſciatic Ligaments, and follow the Pudic Blood-veſſels, anaſtomoſing in ſome places with each other by Oblique Branches.

They ſend many Branches to the Muſcles and other parts about the Anus and Perinœum, and then paſs forwards to ſupply the different parts of the Penis.

On the Penis, the Nerves follow the courſe of the Arteries, the Superior Faſciculus conſtituting the Nervus Dorſalis, and the Inferior giving Branches to the under part of the Penis.

The *Nervus Dorſalis*, which is the moſt conſiderable Nerve of the Penis, runs forwards between the correſponding Artery and Vena Magna, expanding into many Branches, which, after ſupplying the Corpus Cavernoſum and Teguments of the correſponding ſide, terminate in the Subſtance of the Glans.

NERVES

OF THE

LOINS, PELVIS, AND INFERIOR EXTREMITY.

The Nerves of the Loins, Pelvis, and Inferior Extremity, conſiſt of the continuation or inferior portion of the Sympathetic, and of the Trunks and Branches of the *Lumbar* and *Sacral* Nerves.

The Sympathetic Nerve, after reaching the Abdomen, makes a ſweep forwards upon the anterior and lateral part of the Lumbar Vertebræ, between the Tendinous Crura of the Diaphragm and the Pſoas Muſcle.

It afterwards deſcends into the Pelvis, nearly of the ſame ſize as in the ſuperior parts of the Body, and paſſes over the anterior Surface of the Os Sacrum, at the inner ſide of the Great Sacral Foramina.

Towards the lower part of the Pelvis, it becomes conſiderably ſmaller, and at laſt finiſhes its courſe upon the ſurface of the Os Coccygis, where it unites into an Arch with its fellow of the oppoſite ſide.

In the Loins, it forms Ganglia ſimilar to thoſe in the Thorax, each of which is connected behind, by two or three long ſlender Branches to the roots of the Lumbar Nerves, and before, by other ſlender Nerves, to the Aortic Plexus.

In the Pelvis alſo, it forms Ganglia which are connected to the Sacral Nerves on one ſide, and to the Great Sympathetic on the other, by croſs Branches.

Filaments are ſent off, in the Pelvis, from the Sympathetic to the Muſcles and Membranes about the Os Coccygis, and to the Inteſtinum Rectum.

LUMBAR NERVES.

The FIVE LUMBAR NERVES, immediately after emerging from the Bones, communicate with each other; are connected with the Sympathetic Nerve, by Branches which run over the ſides of the Vertebræ; and ſend large Branches backwards to the Muſcles and Integuments on the poſterior part of the Loins.

By their connections with each other, they compoſe a Plexus termed *Lumbar*, which is ſituated behind the Pſoas Muſcle, and ſends Branches outwards to the Quadratus Lumborum, and to the Flexors of the Thigh.

The FIRST LUMBAR NERVE is connected by a ſmall Branch to the Twelfth Dorſal, and by its Trunk to the Second Lumbar.

After giving Twigs to the Muſcles of the Loins, it detaches a principal Branch which paſſes over the Quadratus Lumborum towards the Spine of the Os Ilium, where it ſends Nerves to the Integuments of the Pelvis, to the upper and outer part of the Thigh, to the under end of the Abdominal Muſcles, to the Integuments of the Groin, and to the Pubes and Scrotum.

The SECOND LUMBAR perforates the Pſoas, to which it gives Branches, and afterwards runs into the Third.

From the Second Lumbar, and partly alſo from the Firſt, the *Spermaticus Externus* is ſent off, which perforates the upper end of the Pſoas Muſcle, and deſcends near the Spermatic Veſſels to the under part of the Abdomen. Near Poupart's Ligament, and ſometimes much higher, it ſplits into two Branches: One goes through the Abdominal Ring, to be diſperſed upon the Pubes, Spermatic Cord, Scrotum, and Teſtis, in the Male; and upon the Round Ligament, the Uterus, the Mons Veneris, and Labia Externa, in the Female.

The other Branch paſſes out with the Femoral Veſſels, and ſends Branches to the Inguinal Glands, and to the Integuments of the fore-part of the Thigh.

Another Branch is ſent from the Second, or from the Second and Third Lumbars, termed *Cutaneus Externus*, which paſſes behind the Pſoas, and acroſs the Iliacus Internus, to the Superior Anterior Spinous Proceſs of the Os Ilium. It afterwards bends over the outer end of Poupart's Ligament, and deſcends in the Anterior and External part of the Thigh; dividing into Branches which are chiefly diſperſed upon the Integuments covering the Vaſtus Externus Muſcle, ſome Twigs extending as far as the Joint of the Knee.

Branches of the Second, Third, and Fourth Lumbars, form a Nerve of conſiderable ſize, called *Obturator*, which paſſes between the External and Internal Iliac Blood-veſſels, and along the ſide of the Pelvis.

The Obturator Nerve accompanies the Blood-veſſels of the ſame name, through the upper part of the Obturator Muſcles and Ligament, and having furniſhed Branches to the Obturator and Pectineus Muſcles, it divides into an Anterior and a Poſterior Faſciculus; the former diſperſed upon the two ſmall Adductors and Gracilis, the latter upon the Great Adductor of the Thigh.

The principal parts of the Trunks of the four upper Lumbar Nerves, eſpecially of the THIRD and FOURTH, unite and form a Nerve of great ſize, termed *Crural*, or *Anterior Crural*.

The CRURAL NERVE, after beſtowing Branches upon the Iliacus Internus and Pſoas Muſcle, paſſes behind, then at the outſide of the Pſoas, to get to the Thigh.

In its courſe from the Abdomen, and at the upper part of the Thigh, it is ſituated at the outſide of the Femoral Artery, which lies between it and the correſponding Vein.

Behind POUPART's Ligament, it is divided into many Branches, which are diſtributed to the Muſcles and Integuments on the fore and lateral parts of the Thigh,—one Branch in particular, termed *Saphænus*, deſcending upon the Leg.

The Branches are as follow:

The *Cutaneus Medius*, which deſcends in the fore-part of the Thigh, oppoſite to the inner edge of the Rectus Muſcle, and ſupplies the Integuments near it, as far as the Knee, —one Branch of it connecting itſelf with another of the Cutaneus Anterior.

The *Cutaneus Anterior*,—more internal than the Cutaneus Medius,—which croſſes over the middle of the Sartorius Muſcle, and, after ſupplying the adjacent Integuments, terminates in the Skin and Cellular Subſtance, at the fore and inner part of the Knee.

The *Cutaneus Internus*,—ſtill more internal than the former,—which paſſes between the Sartorius and Triceps, and, after giving Filaments to the Integuments at the inſide of the Thigh, terminates in the Skin at the under and fore part of the Knee.

The Deep Branches of the Crural Nerve, which are conſiderably larger than the Superficial, go to the Pectineus and Triceps, to the Sartorius and Gracilis, and to the four Extenſors of the Leg, and alſo furniſh Twigs to the Femoral Blood-veſſels.

The *Nervus Saphænus* deſcends between the Sartorius and Triceps, and afterwards behind the Tendon of the former, to the inner ſide of the Tibia.

Under the Knee, it gives off a Branch, named by FISCHER *Saphænus Minor*, which goes down a little behind the Saphænus, and, furniſhing Filaments to the Integuments of the inner and back part of the Leg, terminates behind the Malleolus Internus, on the Integuments of the Foot.

The Trunk of the Saphænus attends the Vena Saphæna Major, ſending many Nervous Threads obliquely forwards to the Integuments on the inner and fore part of the Leg, and is at length conſumed upon the Skin and Cellular Subſtance of the upper and inner part of the Foot.

The remaining part of the Fourth Lumbar Nerve unites with the FIFTH into a Trunk which deſcends into the Pelvis.

SACRAL NERVES.

The SACRAL NERVES conſiſt of ſmall *Poſterior*, and large *Anterior* Trunks.

The POSTERIOR SACRAL NERVES paſs out by the Holes in the back-part of the Os Sacrum, and anaſtomoſe with each other, and with ſome of the Branches of the Gluteal Nerves.

They ſend out a few tender Fibrillæ, which are diſperſed upon the Muſcles covering the back-part of the Os Sacrum, and upon the Glutei Muſcles and their Integuments.

ANTERIOR SACRAL NERVES.—Of the Anterior Sacrals, —the two uppermoſt are the largeſt: The reſt ſuddenly diminiſh in ſize, the laſt being the ſmalleſt of the Spinal Nerves.

They go through the Holes in the fore-part of the Os Sacrum, and, ſoon after their exit, are united with each other, and with Branches of the Sympathetic Nerve.

The FIRST, SECOND, and THIRD SACRALS, join into a Trunk, which receives the common one ſent down from the Fourth and Fifth Lumbars, and forms a Plexus which ſends out the SCIATIC, the largeſt Nerve of the Body.

The roots of the Sciatic Nerve give origin to the Faſciculi which compoſe the Pudic Nerve, formerly deſcribed, and alſo to the Gluteal Nerves which are diſperſed upon the Muſcles of the Hips.

The GLUTEAL NERVES run in two Faſciculi,—a Superior, ariſing immediately from the Trunk formed by the two laſt Lumbars, and—an Inferior, coming off from the two laſt Lumbars and firſt Sacral.

The *Superior Faſciculus* goes through the upper part of the Notch of the Os Ilium, to be diſperſed upon the two ſmaller Glutei Muſcles.

The *Inferior* Faſciculus paſſes through the under part of the ſame Notch, and below the Pyriform Muſcle, to be diſtributed upon the Gluteus Maximus and Integuments.

The Fourth Sacral ſends Filaments to the Hypogaſtric Plexus, others to the Muſcles and Ligaments of the Os Coccygis; the reſt paſs outwards to the Muſcles and Integuments about the Anus.

The Fifth, which is ſcarcely above the ſize of a Filament, after giving Twigs to the Coccygeus Muſcle, perforates the Sacro-ſciatic Ligaments, and terminates in the Muſcles and Integuments of the Anus.

Sciatic Nerve.—The Sciatic or Iſchiatic Nerve,—paſſes obliquely through the Notch of the Ilium, under the Pyriform Muſcle. It goes afterwards over the other ſhort Rotator Muſcles, and is placed between the Tuber Iſchii and Trochanter Major, where it is covered by the Gluteus Maximus.

After leaving the Pelvis, it deſcends in the back-part of the Thigh, firſt between the Long Flexors and Adductor Magnus, and then between the latter and Os Femoris, to the Ham, where it obtains the name of *Popliteus.*

In this courſe, it gives out the following Branches, which ſupply the Muſcles and Integuments on the back-part of the Thigh, viz.

Twigs to the Rotators of the Thigh, which come off from it after its paſſage through the Sciatic Notch.

The *Cutaneus Poſterior Superior,* which ariſes within the Pelvis, and, paſſing out with the Sciatic, is divided into

Branches, ſome of which are reflected to the Scrotum in the Male; and to the poſterior parts of the Labia in the Female; and, in both, to the Skin about the Anus and Perinœum.—The principal Branches of this Nerve paſs downwards, ſupplying the Integuments of the back-part of the Thigh, as far as the bending of the Knee.

A *Branch* to the long Head of the Biceps.

Two ſmall Nerves, the one termed *Cutaneus Internus Superior*, which comes off near the upper part of the Thigh, and vaniſhes in the Skin, a little farther down; the other, termed *Cutaneus Internus Inferior*, which ariſes near the former, goes down the poſterior part of the Thigh, and then, deſcending upon the inner Head of the Gaſtrocnemius Externus, terminates in the Integuments of the Calf of the Leg.

A *Large Common Trunk*, and ſometimes, inſtead of it, *ſeparate Branches*, which ariſe near the middle of the Thigh, and are diſtributed to the Adductor Magnus, Semimembranoſus, Biceps, and Semitendinoſus.

NERVUS POPLITEUS.—The Popliteal Nerve is ſituated between the Ham-ſtrings, and between the Skin and Popliteal Blood-veſſels.

A little above the bending of the Knee, it is divided into a Small External, and a Large Internal Branch; the former named *Fibular*, and the latter *Tibial Nerve*.

The Tibial and Fibular Nerves adhere, for ſome way, by Cellular Subſtance; and even the Trunk of the Sciatic may be ſplit into theſe two Nerves for a conſiderable way up the Thigh.

The FIBULAR,—termed alſo PERONEAL NERVE,—ſends off, at its beginning, the *Cutaneus Externus*, which is a ſmall Branch giving Twigs to the under end of the Biceps, and which, after running down on the Outer Head of the Gaſtrocnemius, diſappears in the Integuments of the ſame ſide of the Leg.

Over the outer Condyle of the Os Femoris, it gives off another *Cutaneous Branch*, which goes over the Gaſtrocnemius Muſcle, and, after anaſtomoſing with a Branch of the Tibialis, goes along the outer part of the Leg, and terminates in the Integuments of that ſide of the Foot.

The Fibular Nerve afterwards paſſes over the Head of the Fibula, and divides into *Superficial* and *Deep Branches*, which ſupply the Muſcles and Integuments of the outer and fore part of the Leg.

The *Superficial Fibular* croſſes over the Fibula, immediately under its articulation, and, perforating the Peroneus Longus, and going over the Brevis, it gives Branches to both, and afterwards becomes Subcutaneous, about the middle of the outer part of the Leg.

It ſends Branches to the Metatarſus, and to the Extenſor Digitorum Brevis; and others, which, after anaſtomoſing upon the upper part of the Foot, furniſh Dorſal Branches to the larger Toes.

The *Deep Fibular Nerve* croſſes over the Fibula, immediately above the former, and divides into ſeveral Branches, viz.

A *Reflected Branch* to the ſoft parts of the Joint:

A *Branch* to the Peroneus Longus:

A *Branch* to the Tibialis Anticus:

Branches to the Extenſor Pollicis, and Extenſor Digitorum Longus:

Filaments which creep along the Perioſteum of the Tibia, and *others* which adhere to the Coats of the Tibial Artery.

The longeſt Branch of the Nerve accompanies the Anterior Tibial Artery, and divides upon the Foot into Branches, which have ſome connections with each other, and ſupply the Extenſor Digitorum Brevis.—Some Filaments continued from theſe Branches run to the Muſculi Interoſſei, while others of more conſiderable ſize go to ſome of the innermoſt Toes; one Twig ſinking with a Branch of the Anterior Tibial Artery to the Deep Muſcles of the Sole.

The TIBIAL NERVE paſſes between the Heads of the Gaſtrocnemius Muſcle, and, perforating the origin of the Soleus, deſcends between it and the Flexor Digitorum Longus, upon the Poſterior Tibial Artery, to the under part of the Leg; in which courſe, it ſends off the following Nerves, viz.

The *Communicans Tibiæ*,—which accompanies the Vena Saphena Minor in the back-part of the Leg, and to the outer part of the Foot.

Behind the Belly of the Gaſtrocnemius, the Communicans ſends a Branch to be conſumed in the Fat; and a little lower, it anaſtômoſes with the communicating Branch of the Fibular Nerve.

The under part of this Nerve is diſperſed upon the Integuments of the outer Ankle and adjacent ſide of the

Foot, ſome Branches paſſing as far as the Dorſal ſide of two or three of the ſmaller Toes.

Branches to both Heads of the Gaſtrocnemius, to the Plantaris, and to the Soleus.

Near the middle of the Leg, it ſends *Branches* to the Tibialis Poſticus, to the Flexor Digitorum, and Flexor Pollicis.

One or two *Cutaneous Branches*, diſperſed upon the Skin at the under and inner part of the Leg.

Near the Ankle, a *Branch* which paſſes behind the Tendo Achillis, principally to the Integuments of the outer and back part of the Foot.

The Tibial Nerve paſſes afterwards between the Arteries and Os Calcis into the Sole.

In the hollow of the Os Calcis, after detaching Branches to the parts adjacent, it divides into *Internal* and *External Plantar Nerves*, which are nearly of equal ſize.

The INTERNAL PLANTAR NERVE runs near the inner ſide of the Sole, ſends Filaments to the Abductor Pollicis, Flexor Digitorum Brevis, and Flexor Digitorum Acceſſorius, and Twigs to the Lumbricales.

It afterwards gives out four large Branches, ſplitting into others, which run with the Arteries along the Plantar ſides of the three firſt Toes, and inner ſide of the fourth Toe,—in the manner the Radial Nerve runs along the correſponding Fingers.

The EXTERNAL PLANTAR NERVE ſends Branches to the Heel, and paſſes with the Artery of the ſame name to near the outer edge of the Sole, where it ſplits into three principal Branches.

The two firſt run to the adjacent ſides of the fourth and fifth Toes, and outer ſide of the Little Toe, the inner one often anaſtomoſing with a correſponding Branch of the Internal Plantar.

The third forms an Arch correſponding with that of the External Plantar Artery, furniſhes Branches to the ſhort Muſcles of the Little Toe, to the Interoſſei, Lumbricales, and Tranſverſalis, and terminates in the ſhort Muſcles of the Great Toe.

The Plantar Digital Nerves ſend Filaments to the Integuments, and upon the Toes anaſtomoſe with each other, and with the Dorſal-digital Nerves,—as the Palmar-digital Nerves do in the Hand.

FINIS.

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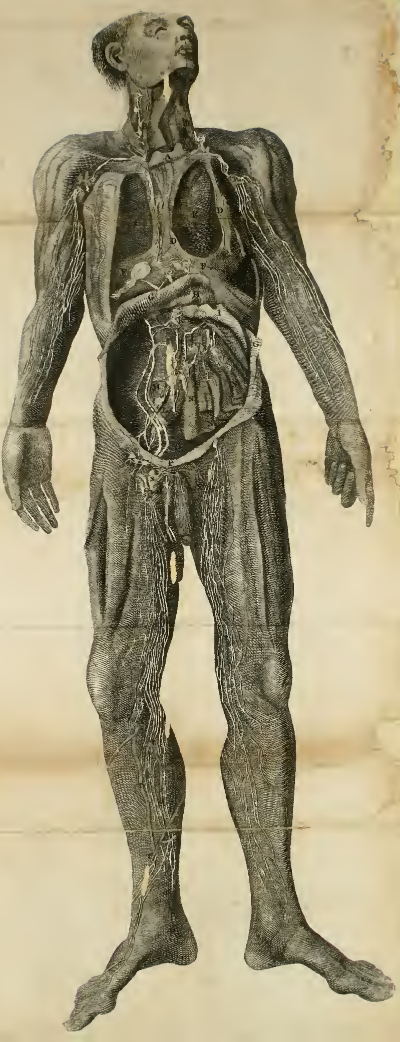B
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TABLE XXIV.

Gives a General View of the Absorbent System, after the Lymphatics and Lacteals had been injected with Quick-silver, the Blood-vessels with Wax, and the Preparation dried.

A, A ſection of the upper end of the ſternum, and of the inner end of the clavicles which are turned up.

B, B, The internal jugular veins, between which are repreſented the muſcles, fat, &c. which cover the trachea.

C, The cavity of the right ſide of the thorax.

D, The pericardium cut.

E, The heart.

F, F, The convex ſurface of the diaphragm.

G, G, A flap formed by the integuments and abdominal muſcles, turned up.

H, Part of the liver.

I, The ſtomach and part of the colon ſhrivelled.

K, K, The deſcending aorta.

L, The right common iliac artery.

M, M, The inferior vena cava.

N, N, The meſentery and ſmall inteſtines collected into folds, and turned to the left ſide.

O, The cavity of the pelvis.

P, The pubes.

Q, R, The ſpermatic cord and teſticle.

S, S, S, The inguinal glands diſtended with quick-ſilver, and in part aſſuming a cellular appearance.

T, T, T, Branches of the vena ſaphena major.

Ab-

ABSORBENTS.

The courſe of many of the abſorbents repreſented in this figure is ſo obvious, as to ſuperſede the neceſſity of letters, viz.

Thoſe upon the upper part of the feet, which take their origin from the toes.

Trunks behind the inner ankles, which aſcend from the ſoles.

Lymphatics from the outſide of the feet and ankles, running acroſs the under part of the tibiæ, to the inſide of the legs.

The principal lymphatics of the legs, running near the great venæ ſaphenæ.

Lymphatic trunks, going obliquely acroſs the upper part of the tibiæ, to the inſide of the legs.

The courſe of the principal lymphatics of the legs, running at the inner ſide of the knees.

A trunk from the inſide of the right knee.

The principal lymphatics from the legs, paſſing along the inſide of the thighs.

An irregular plexus formed by the lymphatics, in their courſe along the inſide of the limbs in general.

The inguinal glands, receiving the lymphatics from the inſide of the thighs, &c.

In the Right Side :—The inguinal glands, receiving lymphatics which run in a radiated manner from the forepart of the thigh upwards and inwards,—from the outer part of the pelvis inwards, and—from the under end of the ſuperficial parts of the abdomen downwards.

Upon the Right Side of the Dorſum Penis :—Two lymphatic trunks, one of which, at the pubes, ſplits into branches, which terminate partly in the uppermoſt, and partly in the innermoſt inguinal glands.

A few of many lymphatics injected from the teſticle, paſſing along the ſpermatic cord.

At the Right Side of the Pelvis:—The iliac plexus of lymphatics, formed by trunks which aſcend, ſome of them from the inguinal glands, behind POUPART's *Ligament*, others from the ſpermatic cord, through the abdominal ring, and ſome from the contents of the pelvis, along with the iliac blood-veſſels.

At the Bifurcation of the Aorta:—Lymphatics which come up from the ſurface of the os ſacrum.

At the ſides of the Inferior Cava, and over the Aorta:—The veſſels and glands which form the lumbar plexus.

Upon the Meſentery:—A few of many injected lacteals, directing their courſe towards the beginning of the thoracic duct.

U, Trunks deſcending from the under part of the liver, and from other viſcera ſituated at the upper part of the abdomen, meeting with the lacteals, and lumbar plexus, and terminating at this place in the thoracic duct.

V, A very large lymphatic gland upon the convex ſurface of the diaphragm, appearing as if formed of convoluted branches.

Large lymphatic veſſels entering this gland, which perforate the diaphragm from the right ſide of the liver.

W, W, Lymphatics and glands placed at the under end of the anterior mediaſtinum, the veſſels paſſing from the ligamentum hepatis latum, through the fore and middle part of the diaphragm.

X, X, &c. The anterior thoracic plexus of lymphatic veſſels and glands, which accompany the internal mammary blood-veſſels, receiving the lymphatics from the convex part of the liver and diaphragm; the lymphatics of the right plexus running to the right general termination of the abſorbent ſyſtem, and thoſe of the left plexus to the upper end of the thoracic duct.

Y, A lymphatic trunk from the mamma and adjacent parts of the thorax, entering glands near the axilla.

Upon the Superior Extremities:—An extenſive plexus formed by the ſuperficial lymphatics, which paſs from the anterior ſide of the extremity upwards, and receive many branches which aſcend in an oblique direction from the oppoſite ſides of the arm.

At the Axillæ:—The lymphatics of the ſuperior extremities entering the axillary glands.

a, *a*, Principal trunks proceeding from the glands of the axillæ.

b, The principal trunk of the left arm, terminating along with the thoracic duct.

c, The thoracic duct receiving a lymphatic belonging to the neck, and terminating in the angle formed by the left inte[illegible]jugular, and left ſubclavian veins.

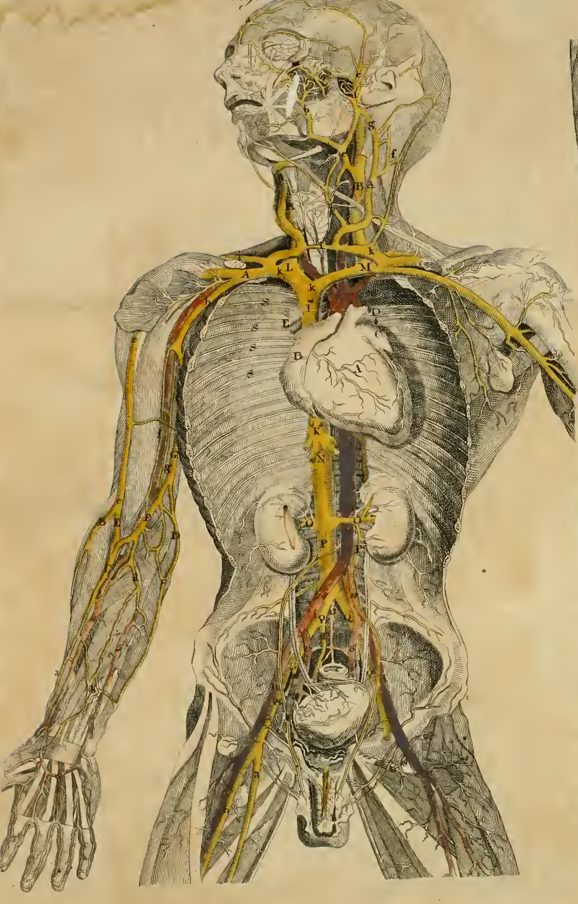
In the Right Side of the Neck:—Some of the lymphatic veſſels and glands which form the jugular plexus.

d, The general termination of the lymphatic veſſels of the right ſide of the head and neck, right arm, &c. in the angle formed by the right internal jugular, and right ſubclavian veins.

N. B. *A much greater number of Abſorbents were injected in the Preparation from which this Figure was taken, than are here repreſented,—none having been drawn excepting what could be diſtinctly ſeen, after the Preparation had been kept a conſiderable time in the dried ſtate, and, of courſe, many lymphatics, ſo ſhrivelled as not to admit of accurate delineation.*

TAB.

Fig. 1.



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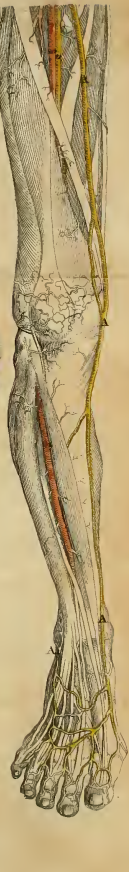

TABLE XXV.

Gives a GENERAL VIEW of the ARTERIAL and VENOUS SYSTEMS.

FIG. 1.

HEAD AND NECK.

a, The frontal vein.

b, The facial vein.

c, The temporal veins.

d, The trunk of the temporal vein, where it lies behind the parotid gland, and receives the tranſverſalis faciei.

e, The common trunk formed by the facial and temporal veins, opening into,

B, The internal jugular.

f, Occipital veins.

g, The external jugular, ariſing from the temporal vein.

h, The anterior external jugular vein.

A, A, The external jugular veins, deſcending, and communicating by,

i, A croſs branch at the bottom of the neck.

k, *k*, The termination of the external jugulars in the ſubclavian veins.

2, The left carotid artery aſcending at the inner ſide of the internal jugular vein, and at the place of its diviſion ſending off the ſuperior laryngeal artery.

SUPERIOR EXTREMITY.

1, The trunk common to the right carotid and ſubclavian arteries,

3, 3,

3, 3, The ſubclavian artery on the left, and humeral artery on the right ſide.

4, The radial, and,

5, The ulnar artery.

6, The ſuperficial palmar arch, the radial part of which in this figure larger than uſual.

a, *b*, *c*, Median veins.

c, Superficial ulnar vein.

B, The cephalic vein.

D, The baſilic vein.

C, The mediana longa, dividing into,

E, The mediana cephalica, and,

F, The mediana baſilica.

e, *e*, The cephalic vein, aſcending and getting between the pectoral and deltoid muſcles.

G, The baſilic vein paſſing along the inner ſide of the arm, and terminating in the axillary vein.

f, *g*, The venæ concomites of the humeral artery.

h, The axillary vein.

i, The termination of the cephalic.

A, The ſubclavian vein.

TRUNK.

A, The heart, with the coronary veſſels.

B, The right, and,

C, The left auricle.

D, E, The pulmonary blood-veſſels.

F, The arch of the aorta.

G, The aorta deſcendens.

7, The origin of the diaphragmatic,

8, Of the cœliac,

9, Of the ſuperior meſenteric,

10, Of the ſpermatic, and,

11, Of the inferior meſenteric arteries.

12, The diviſion of the aorta into the two common iliacs.

13, The ſacra media, paſſing behind the inteſtinum rectum.

14, 14, The common iliac arteries.

H, H, The external iliacs.

15, 15, The internal iliacs.

I, The vena cava ſuperior.

K, The vena cava inferior.

k, The termination of one of the internal mammary veins.

L, M, The great ſubclavian veins, the left longer than the right.

N, The termination of the hepatic veins.

O, O, The renal veins, with their correſponding arteries.

P, P, The ſpermatic veins.

Q, Q, The common iliac veins.

Q a, Q a, The external iliac veins.

R, R, The internal iliac veins.

19, The vena magna penis, forming a plexus of veins at the neck of the bladder.—At the ſides of the vein the arteries appear.

S, S, &c. The intercoſtal veſſels.

INFERIOR EXTREMITY.

A, A, The femoral arteries, the left one cut.

16, The circumflexa externa.

17, The profunda femoris.

18, The circumflexa interna.

a, The vena ſaphena major.

b, The femoral vein.

TABLE XXV. CONTINUED.

FIG. 2.

20, The continuation of the femoral artery.

21, The correſponding vein.

22, The anterior tibial artery.

A, A, A, The vena ſaphena major.

A a, The beginning of the ſaphena minor.—Upon the foot and toes a plexus of veins appear, which terminates in both the ſaphenæ.

TAB. XXVI.

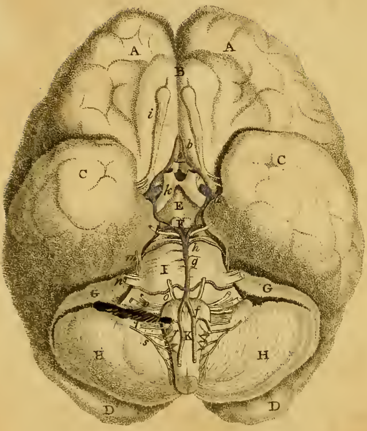

TABLE XXVI.

A VIEW of the BASE of the BRAIN, and TRUNKS of its PRINCIPAL ARTERIES, with the ORIGIN of the NERVES which go through the Cranium.—The Arteries are lettered on the one ſide only, and the Nerves on the other.

A, A, The anterior lobes of the brain.

B, The diviſion of the anterior lobes.

C, C, The lateral lobes.

D, D, The poſterior lobes.

E, The infundibulum, ſupported upon the union of the optic nerves.

F, The corpora albicantia.

G, G, H, H, The cerebellum. G, G, Its ſuperior anterior lobules.

I, I, The tuber annulare.

K, The medulla oblongata, and beginning of the ſpinal marrow.

a, A ſection of the internal carotid artery, after it has entered the cranium.

b, The anterior branch of the internal carotid, approaching its fellow of the oppoſite ſide.

c, A croſs branch, by which the two anterior branches communicate.

d, The lateral branch of the internal carotid, diſappearing in the foſſa of SYLVIUS,

e, The branch by which the internal carotid communicates with a branch of the baſilar artery, to form a part of the circle of WILLIS.

f, The vertebral artery, ſending branches to the cerebellum and ſpinal marrow.

g, The baſilar artery, formed by the union of the vertebral arteries, and ſending branches to the tuber annulare, and a large branch on each ſide to the cerebellum.

h, The diviſion of the baſilar artery into four branches; the two poſterior going chiefly to the cerebellum, and the two anterior, after communicating with the internal carotids, diſperſed upon the brain.

i, The olfactory, or firſt pair of nerves, having different roots behind, and a bulbous extremity before.

k, The optic nerve, united before the infundibulum to its fellow of the other ſide.

l, The third pair.

m, The fourth pair.

n, The fifth pair, formed of faſciculi.

o, The ſixth pair.

p, The ſeventh pair, compoſed of the portio dura before, and the portio mollis behind; with ſome ſmall communicating threads between them.

q, The eighth pair, formed before of the nervus gloſſopharyngeus, and behind of the par vagum, compoſed of ſmall faſciculi.

2, The ninth pair, ariſing in faſciculi.

1, The acceſſory nerve of the eighth pair.

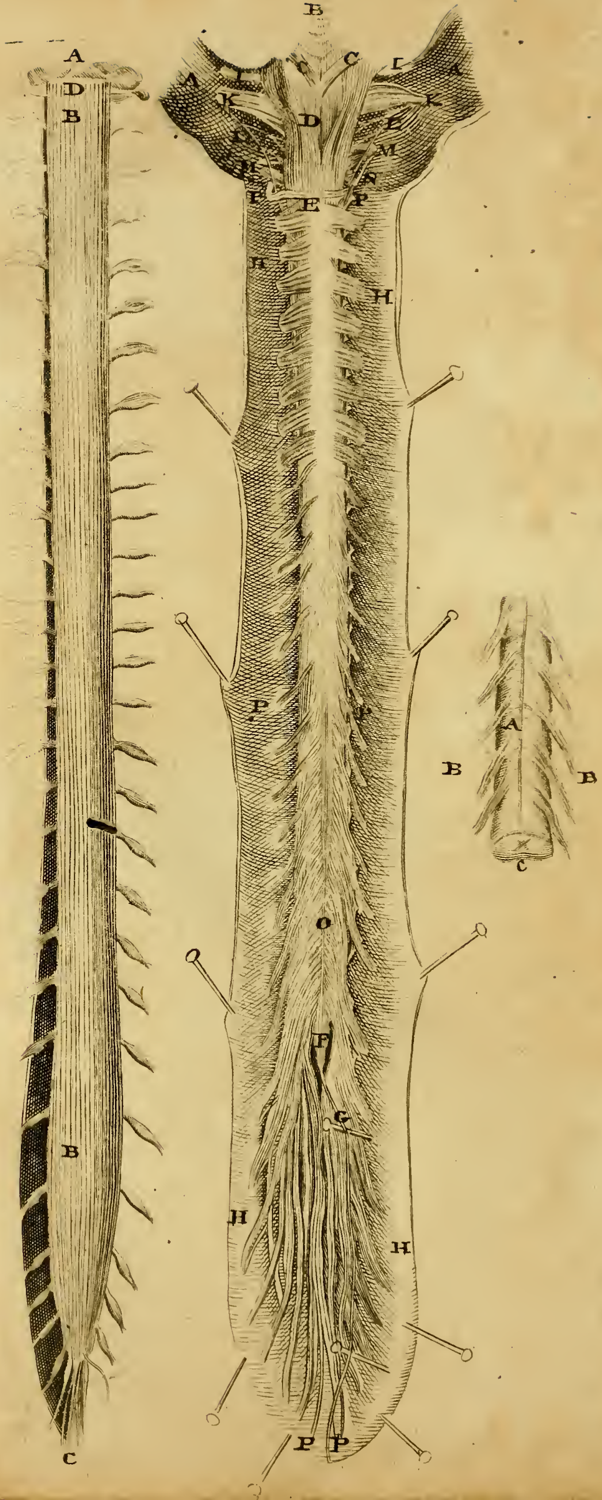
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TABLE XXVII.

VIEWS of the SPINAL MARROW.

FIG. 1.

Preſents a Poſterior View of the Production of the DURA MATER, inveſting the SPINAL MARROW and its NERVES; together with the Direction, Situation, and proportional Size of the VERTEBRAL NERVES in the SPECUS of the SPINE.

A, A portion of the firſt vertebra, and the proceſſus dentatus of the ſecond.

B, B, The covering of the ſpinal marrow, produced from the dura mater, continued from the foramen magnum of the occipital bone to the middle of the os ſacrum.

C, A ligament continued from the ſpinal marrow to the os coccygis.

D, A ſection of the ſpinal marrow at its origin.

On each ſide of the ſpinal marrow are ſeen the thirty pair of ſpinal nerves with their ganglia, alſo covered with the dura mater.

FIG. 2.

Gives a Poſterior View of Part of the MEDULLA OBLONGATA, and the whole of the SPINAL MARROW produced from it, lying in its natural ſituation within the Sheath of the VERTEBRÆ, which is concealed by the Sheath of the DURA MATER being laid open longitudinally, and pinned back.

A, A, Portions of the os petroſum and os occipitis, covered with the dura mater.

B, The vermiform proceſs of the cerebellum.

C, C, Part of the medulla oblongata.

D, The calamus ſcriptorius, in the bottom of the fourth ventricle.

E, The beginning of the ſpinal marrow.

F, The termination of the ſpinal marrow in two little eminences.

G, A ligament running from the under end of the ſpinal marrow, through the dura mater, to be fixed to the os coccygis.

H, H, &c. The dura mater, cut and pinned back.

I, I, The ſeventh pair of nerves.

K, K, The eighth pair.

L, L, The nervus acceſſorius, ariſing by different roots from the upper end of the ſpinal marrow.

M, M, The ninth pair of nerves.

N, The upper end of the ligamentum denticulatum of this ſide, adhering to the dura mater. In the interſtices of the ſpinal nerves the teeth of this ligament are ſeen inſerted into the dura mater, as far as the under end of the ſpinal marrow.

O, The under part of the ſpinal marrow, ſending off the nerves which form the cauda equina.

P, P, &c. The poſterior origins of the thirty pair of ſpinal nerves, and their ſituation within the dura mater; together with the appearance of the filaments which form them.

FIG.

FIG. 3.

Repreſents a PORTION *of the* SPINAL MARROW, *taken from the Upper Part of the Back,—viewed anteriorly.*

A, A ligament produced from the pia mater, inſerted into the medullary ſubſtance.

B, B, The anterior origins of the ſpinal nerves, formed of faſciculi of filaments.

C, A ſection of the ſpinal marrow, ſhewing the medullary circumference, and crucial figure of the cineritious centre.

TAB. XXVIII.

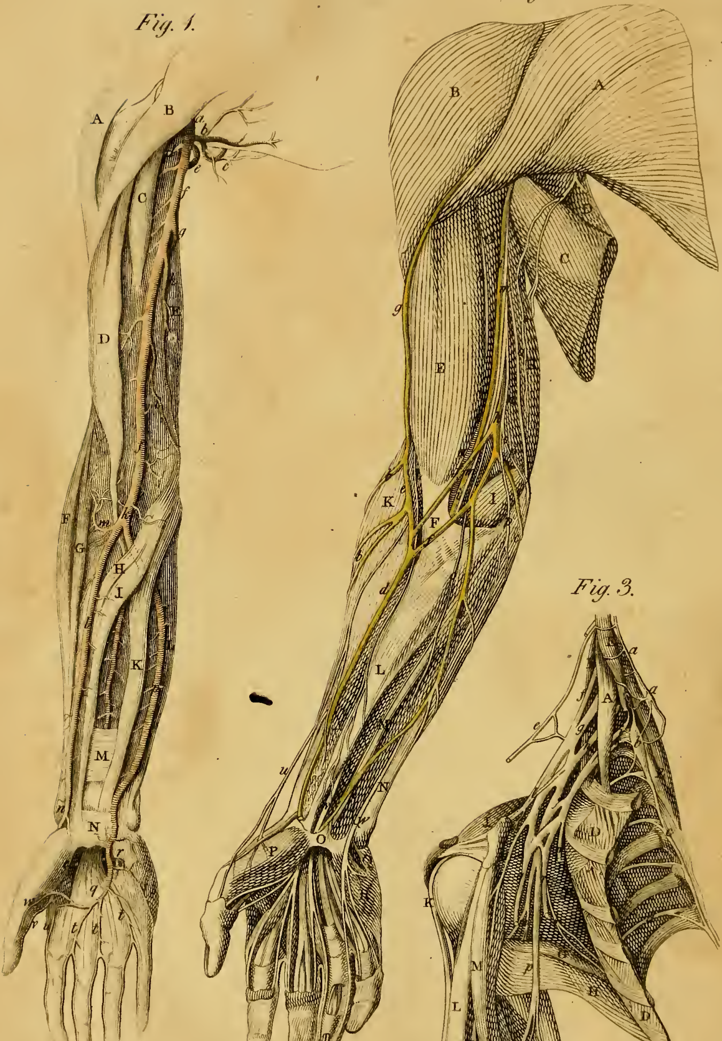

Fig. 1.

Fig. 2.

Fig. 3.

TABLE XXVIII.

Repreſents the BLOOD-VESSELS and NERVES, ſeen on the Fore-part of the SUPERIOR EXTREMITY. The Figures belong to the Right Side.

FIG. 1.

The ARM of a YOUNG SUBJECT, with the ARTERIES INJECTED, and the MUSCLES DRIED.

MUSCLES.

A, The deltoid.
B, The pectoralis major.
C, The coraco-brachialis.
D, The biceps.
E, The triceps.
F, The ſupinator longus.
G, The extenſores carpi radiales.
H, The pronator teres.
I, The flexor carpi radialis and palmaris longus pulled towards the radius.
K, The flexor digitorum ſublimis and profundus drawn towards the ulna.
L, The flexor carpi ulnaris.
M, The pronator radii quadratus.
N, The ligamentum carpi annulare.

ARTERIES.

a, The axillary artery.
b, The ſcapularis interna.

TABLE XXVIII. CONTINUED.

c, The dorſalis ſcapulæ inferior, turning round the under edge of the ſcapula.

d, The circumflexa anterior.

e, The circumflexa poſterior.

f, *f*, The trunk of the humeral artery, ſending branches to the biceps and other muſcles on the arm.

g, The profunda, or ſpiralis.

h, The profunda minor.

i, The ramus anaſtomoticus magnus.

k, The diviſion of the humeral artery into radial and ulnar arteries.

l, The radial artery, ſending numerous branches to the muſcles next the radius.

m, The recurrent branch of the radial artery.

n, The under end of the radial artery, after giving off the ſuperficial volar branch, turning between the metacarpal bones of the thumb and fore-finger, to form,

o, The deep arch of the palm.

p, The ulnar artery, pulled a little towards the inner ſide of the arm, to ſhew the branches it ſends to the correſponding muſcles.

q, The ſuperficial palmar arch, formed by the ulnar artery.

r, The deep palmar branch of the ulnar artery, anaſtomoſing with the arcus profundus of the radial artery, behind the tendons of the flexors of the fingers.

s, A branch to the inner ſide of the little finger.

t, *t*, *t*, The three large digital branches of the ulnar artery, ſending branches to the fingers.

u, A branch from the conjoined radial and ulnar arteries to the radial ſide of the fore-finger.

v, A ſimilar branch from theſe arteries to the thumb.

w, Another branch to the thumb from the ulnar artery.

FIG. 2.

Repreſents the Firſt Layer of MUSCLES, *with the Subcutaneous* BLOOD-VESSELS *and* NERVES *of the Superior Extremity.*

MUSCLES.

A, The pectoralis major.

B, The deltoides covered with cellular membrane.

C, The latiſſimus dorſi.

D, Part of the intercoſtales.

E, The biceps flexor cubiti.

F, The round tendon of the biceps, with its aponeuroſis extending to the inſide of the fore-arm.

G, The coraco-brachialis.

H, The triceps extenſor cubiti.

I, The pronator teres.

K, The ſupinator radii longus.

L, The flexor carpi radialis, and,

M, The palmaris longus, lying over the flexor digitorum ſublimis.

N, The flexor carpi ulnaris.

O, The ligamentum carpi annulare.

P, The abductor pollicis.

Q, The abductor minimi digiti.

R, The flexor parvus minimi digiti.

S, The adductor pollicis.

T, The abductor indicis.

Upon the palm of the hand, and correſponding ſide of the fingers, the tendons of the flexores digitorum appear, with the lumbricales, and part of the ſheaths of the tendons.

BLOOD-VESSELS.

a, The brachial artery, appearing near the inner edge of the tendon of the biceps, where it may always be felt.

b, *b*, Superficial radial veins paſſing to the cephalic vein.

c, *c*, Superficial ulnar veins running to the baſilic.

d, The mediana longa.

e, The mediana cephalica.

f, *f*, Two median baſilic veins, found in the ſubject the figure was taken from.

g, The vena cephalica.

h, The baſilica.

i, *i*, Deep humeral vein accompanying the artery.

NERVES.

k, The muſculo-cutaneus.

l, The trunk of this nerve getting from behind the biceps, and dividing into branches, which extend along the fore-arm as far as the wriſt.

m, *m*, The trunk of the radialis, covering part of the humeral artery.

n, The cutaneus.

o, *o*, The branches of the cutaneus paſſing partly over, and partly under, the cutaneous veins, ſome of its twigs proceeding as far as the wriſt.

p, *p*, Branches of that nerve to the inner and back-part of the fore-arm.

q, The ulnaris.

r, A branch from the ſecond intercoſtal nerve.

s, A branch of that nerve to the inner ſide of the arm.

t, Another branch of that nerve, which gives branches to the mamma.

u, The volar branch of the ſpiral nerve running to the muſcles of the thumb.

v, The trunk of the radial nerve, paſſing under the annular ligament of the wriſt, and afterwards ſending two branches to the thumb, two to the fore-finger, and one branch to the radial ſide of the ring-finger.

w, The trunk of the ulnar nerve, ſending branches to the inner ſide of the palm, and afterwards two branches to the little finger, and one to the ulnar ſide of the ring-finger.

FIG. 3.

Shews the BRACHIAL PLEXUS *of* NERVES, *and the Union of the* INTERCOSTALS *with the* GREAT SYMPATHETIC NERVE.

MUSCLES.

A, The ſcalenus anticus.
B, The ſcalenus medius.
C, The ſcalenus poſticus.
D, D, The intercoſtals.
E, E, The longus colli.
F, The ſubſcapularis.
G, The teres major.
H, The latiſſimus dorſi.
I, The ſupra-ſpinatus.
K, The long head, and,
L, The ſhort head of the biceps.
M, The coraco-brachialis.
N, The long, and,
O, The ſhort head of the triceps.

NERVES.

Nerves.

a, *a*, The trunk and middle cervical ganglion of the great ſympathetic nerve, with its connection to the cervical nerves.

b, The inferior cervical, and firſt dorſal ganglia, of the great ſympathetic nerve, conjoined in this figure.

c, The trunk of the great ſympathetic nerve within the thorax, with its connections to the intercoſtals.

d, The trunk of the fifth intercoſtal nerve.

e, The trunk of the phrenic nerve, which is here turned aſide, ariſing from, or connected with, the third and fourth cervicals.

f, The fourth,

g, The fifth,

h, The ſixth, and,

i, The ſeventh cervical nerve.

k, The firſt dorſal nerve, joined to the ſeventh cervical.

From the four inferior cervical nerves and firſt dorſal, the *axillary plexus* is formed, which ſends off the following nerves to the ſuperior extremity, viz.

l, The ſcapularis.

m, The articularis.

n, The cut trunk of the cutaneus.

o, *o*, The muſculo-cutaneus, perforating the coraco-brachialis muſcle.

p, The ſpiralis.

q, The radialis cut acroſs.

r, The ulnaris alſo cut acroſs.

s, A branch to the teres major and latiſſimus dorſi.

TAB. XXIX.

Fig. 1.

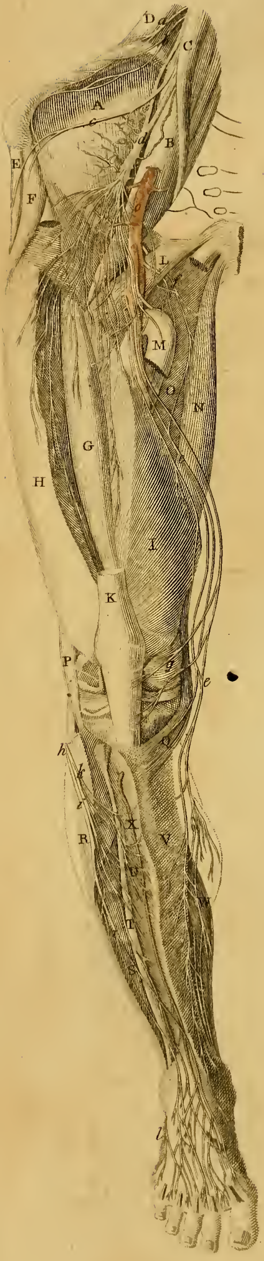

Fig. 2.

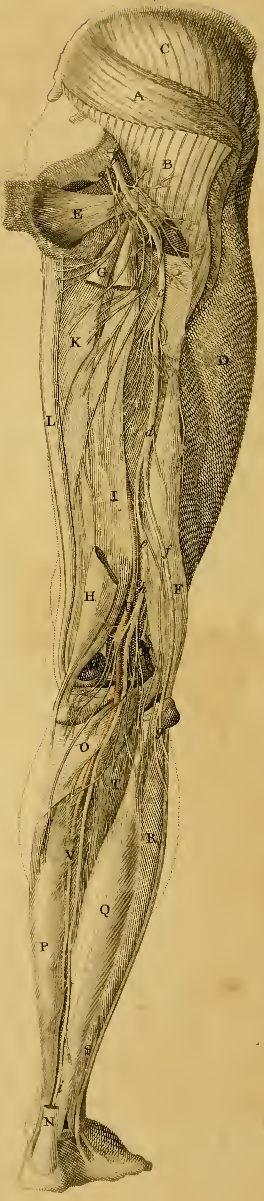

Fig. 3.

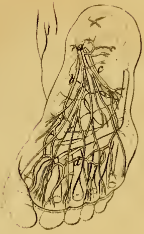

TABLE XXIX.

Shews the MUSCULAR NERVES of the INFERIOR EXTREMITY of the RIGHT SIDE.

FIG. 1.

Gives a VIEW of the PRINCIPAL MUSCULAR NERVES ſeen on the Fore-part of the Inferior Extremity.

MUSCLES AND ARTERIES.

A, The iliacus internus.
B, The pſoas magnus.
C, The pſoas parvus.
D, The quadratus lumborum.
E, Part of the gluteus medius.
F, The gluteus minor.
G, The cruralis.
H, The vaſtus externus.
I, The vaſtus internus.
K, The tendon of the rectus inſerted into the patella.
L, The pectineus.
M, The adductor longus femoris, divided, to ſhew the nervus obturatorius.
N, The gracilis.
O, The adductor magnus femoris.
o, The femoral artery.
P, The biceps cruris.
Q, The tendon of the gracilis, inſerted into the tibia.
R, The peroneus longus.
S, The peroneus brevis.
T, Part of the fibula.
U, The tibialis poſticus.

V, The tibia.

W, The ſoleus.

X, The anterior tibial artery.

NERVES.

a, A branch of the firſt lumbar nerve.

b, A branch of the ſecond lumbar nerve.

c, The external cutaneous nerve.

d, The crural nerve, with its diviſion into the branches which ſupply the muſcles on the fore-part of the thigh.

e, *e*, The nervus ſaphenus, ſent from the crural nerve to the inner parts of the leg.

f, The anterior portion of the obturator nerve.

g, Branches of the crural nerve, terminating upon the knee.

h, The trunk of the fibular nerve.

i, The ſuperficial fibular nerve.

k, The deep fibular nerve.

l, A branch of the tibial nerve to the outer part of the foot.

FIG. 2.

The Principal MUSCULAR NERVES, ſeen in the Back-part of the Inferior Extremity.

MUSCLES AND ARTERIES.

A, B, The gluteus maximus. B, Part of the muſcle cut from its origin, and turned aſide.

C, The gluteus medius.

D, The vaſtus externus.

E, The obturator internus.

F, The biceps cruris.

TABLE XXIX. CONTINUED.

G, H, Sections of the ſemitendinoſus. Contiguous to G, is a ſection of the long head of the biceps cruris.

I, The ſemimembranoſus.

K, The adductor magnus femoris.

L, The gracilis.

M, M, The two heads of the gaſtrocnemius externus.

N, The Tendo Achillis.

O, The popliteus.

P, The flexor longus digitorum pedis.

Q, The flexor longus pollicis pedis.

R, The peroneus longus.

S, The peroneus brevis.

T, The tibialis poſticus.

U, The crural artery.

V, The poſterior tibial artery.

NERVES.

a, The poſterior ſuperior cutaneous nerve.

b, The ſciatic nerve, paſſing out of the cavity of the pelvis.

c, The trunk of this nerve, ſending branches to the muſcles in the back-part of the thigh.

d, The diviſion of the ſciatic nerve into,

e, The tibial nerve, and,

f, The fibular nerve.

g, The fibular nerve, dividing into the ſuperficial and deep fibular nerves.

h, The tibial nerve, ſending branches to the muſcles in the upper and back-part of the leg.

i, The tibial nerve paſſing to the ſole.

FIG.

TABLE XXIX. CONTINUED.

FIG. 3.

a, The diviſion of the tibial nerve into external and internal plantar nerves, and theſe again into ſeveral branches.

b, The internal plantar artery.

c, The external plantar artery.

d, The arch formed by the external plantar artery.

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INDEX.

A

Pag.

ABDOMEN, of the, vol. II. - 159
———, muſcles on the anterior and lateral parts of the, vol. I. - . - 130
———, ——— within the cavity of the, 139
———, blood-veſſels of the containing parts of the, vol. III. - - 113
———, lymphatics of the under part of the, 12
Abducentes, or ſixth pair of nerves, - 159
Abductor { indicis / minimi digiti / pollicis } manus, vol. I. 177.178
——— { or pri~~us~~or indicis / ——— medii digiti / ——— tertii digiti / minimi digiti / pollicis } pedis, 203.206
ABSORBENT SYSTEM, of the, vol. III. - 3
Accelerator urinæ, vol. I. - - 135
Acceſſory nerve to the eighth pair, vol. III. 172
Acervulus cerebri, vol. II. - - 31
Acuſticus, nervus, vol. III. - 160
Adductor { minimi digiti / pollicis } manus, vol. I. 205.203
Adductor { or poſterior indicis / ——— medii digiti / ——— tertii digiti / — prior minimi digiti / pollicis } pedis, 203.206

INDEX.

Pag.
Adductor femoris triceps, - - 184
——— oculi, vol. II. - - - 63
Adeps, - - - - - 11
Adipoſe arteries, vol. III. - - 106
Alæ veſpertilionis, vol. II. - - 237
Albuginea tunica, teſtis, - - 218
——— oculi, - - 48
Almonds of the ear, - - - 108
Alveolar artery, vol. III. - - 51
Amnios, vol. II. - - - 258
Amygdalæ, - - - 108
Anconeus, vol. I. - - - 167
Anterior auris, - - - 110
Anthelix, vol. II. - - 76
Antitragicus, - - - 78
Antitragus, - - - - 76
Anus, muſcles of the, vol. I. - - 134
Aorta, general courſe of the, vol. III. - 43
Aponeuroſis of the ſuperior extremity, vol. I. 165
——— inferior extremity, - 182
——— palmaris, - - 168
——— plantaris, - - - 199
——— temporalis, - - - 115
Appendages of the ſkin, vol. II. - - 8
Appendices vermiformes of the cerebellum, - 32
Appendix vermiformis of the inteſtinum cæcum, 172
Aqua labyrinthi, - - - 94
Aquæductus Fallopii, - - 92
——— Sylvii, - - - 30
Aqueous humour of the eye, - - 54
Arachnoidea, tunica, - - - 19
Arbor vitæ, - - - 33
Arch of the aorta, vol. III. - - 43
Arches of the palate, vol. II. - 108
Arcus plantaris arterioſus, vol. III. - 135
——— arterioſus volaris profundus, - 81
——— ſuperficialis, - 84
Arm-bone, vol. I. - - - 66
Arteries, of the, vol. III. - 33

Articular

Pag.
Articular nerve of the ſhoulder, - 186
Aryteno-epiglottideus, vol. I. - - 129
Arytenoid { cartilages, glands, } vol. II. 112.115
Arytenoideus { obliquus, tranſverſus, } vol. I. - 128.129
Aſtragalus, - - - - 90
Attollens aurem, - - - 109
Auditorius, nervus, vol. III. - - 160
Auricles of the heart, vol. II. - - 132
Auricularis poſterior arteria, vol. III. - 50
Auris internus, vol. II. - - 86
—— retrahentes, vol. I. - - 110
—— tranſverſus, vol. II. - - 78
Axillary artery, vol. III. - - 76
—— glands, - - - 27
—— plexus, - - - - 185
Azygos uvulæ, vol. I. - - 125
—— vena, vol. III. - - - 92

B

Ball of the Eye, vol. II. - - 44
——, coats of the, - - ib.
——, humours of the, - 54
——, muſcles of the, - 61
——, veſſels of the, { vol. II. - 65
vol. III. - 56 }
——, nerves of the, { vol. II. - 66
vol. III. - 151 }
Baſilar artery, vol. III. - - 62
Baſilic vein, - - - - 85
Biceps flexor cubiti, vol. I. - - 166
—— cruris, - - - 193
Biventer cervicis, - - - 154
—— maxillæ inferioris, - - 120
Bladder of Urine, vol. II. - 212
——, blood-veſſels of the, vol. III. 118
——, lymphatics of the, - 13

Pag.
BLOOD-VESSELS in general, of the, - 33
BONES in general, of the, vol. I. - - 3
Bones of the cranium, - - - 6
———— face, - - - 24
———— trunk, - - - 39
———— pelvis, - - - 50
———— thorax, - - - 56
———— ſuperior extremity, - 63
———— inferior, - - - 82
BONES, of the formation of, - - 223
———, of the ſtructure of, - - 217
———, different kinds of connection and motion of, 226.227
Brachial artery, vol. III. - - 78
Brachialis internus, vol. I. - - - 166
BRAIN, of the, vol. II. - - 14
———, arteries of the, vol. III. - - 59
———, veins of the, - - - 69
———, nerves which ariſe from the, vol. II. 36
vol. III. 150
Breaſt-bone, or Sternum, vol. I. - - 60
Bronchi, vol. II. - - - - 149
Bronchial arteries and veins, vol. II. - 154
vol. III. - 89
———— glands, vol. II. - - 152
Buccalis arteria, vol. III. - - 51
Buccinator, vol. I. - - - 114
Bulb of the urethra, vol. II. - - - 228
BURSÆ MUCOSÆ, of the, vol. I. - - 209
Burſæ mucoſæ of the ſuperior extremity, - 211
———— of the inferior ————, - 214

C

Cæcum, inteſtinum, vol. II. - - 171
———, abſorbents of the, vol. III. - - 16
Calamus Scriptorius, vol. II. - - 33
Calcis, os, vol. I. - - - 91
Canals of the cochlea, vol. II. - - 88

Capitatum,

Pag.
Capitatum, or magnum, os, vol. I. - 76
Capitis rectus anterior { major, minor, } - 148
——— lateralis, - - ib.
——— poſticus { major, minor, } - 157
CAPSULÆ RENALES, vol. II. - - 210
———, blood-veſſels of the, vol. III. 106
———, lymphatics of the, - 20
Cardia, vol. II. - - - 165
Cardiac nerves, vol. III. - 172.200
Carotid arteries, - - 45
——— artery, external, - - ib.
———, internal, - - - 54
Carpal bones, vol. I. - - - 73
CARTILAGES, - - 222
Cartilago enſiformis, - - 61
Caruncula lacrymalis, vol. II. - 43
Cauda Equina, vol. III. - - 179
Cava, vena, general courſe of the, }
——— ſuperior, } - 44
——— inferior, }
Cawl, vol. II. - - - 177
Cellular ſubſtance, - - 10
Centralis retinæ arteria, vol. III. - 56
——— vena, - - 66
Centrum ovale of VIEUSSENS, vol. II. - 23
Centrum ſemicirculare geminum, - 25
Cephalic vein, vol. III. - 86
Cerebellum, vol. II. - - 31
Cerebrum, - - 20
Cervical nerves, vol. III. - - 182
——— arteries, - - 75
——— vertebræ, vol. I. - - 41
Cervicalis deſcendens, - - 153
Cheek, vol. II. - - 98
Cheek-bone, ſee os malæ, vol. I. - 25
Cheſt, bones of the, - - 56

Pag.
Chorda tympani, vol. II. 95
Chorda tympani, vol. III. 163
Chorion, vol. II. 258
Choroid coat, 48
——— plexus, 25
Chylopoietic and Assistant Chylopoietic Viscera, of the, 160
———, blood-veſſels of the, vol. III. 94
———, lacteals and lymphatics of the, 15
———, nerves of the, 205
Cilia, vol. II. 41
Ciliary arteries, vol. III. 57
——— veins, 67
——— circle, vol. II. 48
——— glands, 40
——— proceſſes, 51
Cineritious ſubſtance of the brain, 22
Circulus Iridis arterioſus, vol. III. 58
Circumflexa femoris arteria, interna, externa, 224
——— humeri arteria anterior, poſterior, 77.78
Circumflexus palati, vol. I. 123
Circumvolutions of the brain, vol. II. 21
——— of the cerebellum, 32
Circus arterioſus of Willis, vol. III. 59.64
Clavicle, vol. I. 63
Clitoridis erector, 137
Clitoris, vol. II. 224
Coats of the eye, 44
Coccygeus, vol. I. 139
Coccygis, os, 48
Cochlea, vol. II. 88
Cœliac artery, vol. III. 94
Colic arteries, 99.100
——— veins, 101.103
Collar-bone, vol. I. 63
Colli interſpinales, 159
——— intertranſverſales, ib.

Pag.
Colli longus, - - - - 147
—— ſemiſpinalis, - - - 156
—— tranſverſalis, - - *ib.*
Colon, vol. II. - - 172
——, abſorbents of the, vol. III. - 16
Columnæ carneæ of the heart, vol. II. - 135
——— valvulæ Vieussenii, - 33
Commiſſura cerebri { anterior, posterior, } - 30
——— mollis of the optic thalami, - 25
Communicans faciei, nervus, vol. III. - 160
Complexus, vol. I. - - 154
Compreſſor naris, - - - 110
Connection of bones, different kinds of, - 226
Conſtrictor iſthmi faucium, - - 124
——— pharyngis { inferior, medius, } - 126
——— pharyngis ſuperior, - - 127
Coraco-brachialis, - - 164
Cord, umbilical, vol. II. - - - 254
Cornea, - - - 45
Cornua Ammonis, - - 27
——— of the ventricles of the brain, - 24
Coronary arteries of the lips, vol. III. - 48
——— artery of the ſtomach, - 94
——— veſſels of the heart, vol. II. - 143
Corpora albicantia, vol. II. - - 34
——— cavernoſa penis, - - 227
——— fimbriata, or tænia Hippocampi, - 27
——— olivaria, - - 36
——— pyramidalia, - - 35
Corpus adipoſum, - - 11
——— calloſum, - - 21
——— ciliare, - - - 50
——— mucoſum, - - 5
——— ſpongioſum urethræ, - - 228
Corrugator ſupercilii, vol. I. - 108
Cortical ſubſtance of the brain, vol. II. - 22
Coſtal nerves, vol. III. - - 203

Pag.
CRANIUM, bones of the, vol. I. - 6
———, muſcles of the integuments of the, 107
———, nerves which paſs through the baſe of the, vol. III. - - - 150
Cremaſter, vol. I. - - 134
Crico-arytenoideus { lateralis, / poſticus, } - 128.127
Cricoid cartilage, vol. II. - 112
Crico-thyroideus, vol. I. - - 119
Crura cerebri, vol. II. - - 34
—— cerebelli, - - - 35
Crural artery, vol. III. - - 122
——— vein, - - 138
——— nerve, - - 215
Cruralis, vol. I. - - 199
Cryſtalline lens, vol. II. - 55
Cuboides, os, vol. I. - - 93
Cucullaris, - - - 149
Cuneiforme, os, - - 74
Cuneiformia, oſſa, - - 93
Cutaneous nerve of the ſuperior extremity, vol. III. 186
Cuticle, vol. II. - - - 3
Cutis vera, - - 6
Cyſtic artery, vol. III. - - 96
—— duct, vol. II. - - 196
Cyſtis fellis, - - - 194

D

Dartos, - - - 217
Deltoides, vol. I. - - 163
Depreſſor { anguli oris, - 113
Depreſſor { labii inferioris, - 112
Depreſſor { labii ſuperioris alæque naſi, 111
——— oculi, vol. II. - - 63
Diaphragm, vol. I. - - 139
———, blood-veſſels of the, vol. III. - 93
———, nerves of the, - 196.207
Didymi, vol. II. - 216

Pag.
Digaſtricus, vol. I. - - - 120
Dorſal vertebræ, - - - - 43
——— nerves, vol. III. - - 203
Dorſalis linguæ, arteria, - - 47
———— penis, nervus, - - 211
Dorſi interſpinales, vol. I. - - 159
—— intertranſverſales, - - *ib.*
—— latiſſimus, - - - 149
—— longiſſimus, - - - 153
—— ſemiſpinalis, - - 155
Drum of the ear, vol. II. - 81
Duct, cyſtic, - - - 196
——, hepatic, - - 194
——, pancreatic, - - 203
——, parotid, - - 105
——, thoracic, vol. II. - - 157
——, thoracic, vol. III. - - 21
Ducts, lactiferous, vol. II. - 122
——, ſebaceous, - - 10
Ductus communis choledochus, - 196
———— incifivus, - - 74
Duodenum, - - 170
DURA MATER, - - 14
————————, blood-veſſels of the, vol. II. 17
————————, blood-veſſels of the, vol. III. 51.69
————————, proceſſes of the, vol. II. - 15

E

EAR, of the, - - 75
——, ſmall bones of the, - - 84
——, external, - - 75
————————, muſcles of the, vol. I. - 109
———————————— proper to the, vol. II. 77
—— internal, - - - 81
——————, muſcles of the, - 86
Eighth pair of nerves, vol. III. - - 165
Ejaculator ſeminis, vol. I. - 135

Eminentiæ

Pag.
Eminentiæ olivares, vol. II. - - 36
Eminentiæ mammillares, vol. II. - 34
Eminentiæ pyramidales, vol. II. - - 35
Emulgent artery and vein, vol. III. - 105.106
Epidermis, vol. II. - - 3
Epididymis, - - - 219
Epigaſtric artery, vol. III. - - 121
Epiglottis, vol. II. - - 113
Erector clitoridis, vol. I. - - 137
——— penis, - - - 135
Ergot, or hippocampus minor, vol. II. - 24
Euſtachian tube, - - 82
Extenſor carpi radialis brevior, longior, vol. I. - 170
———— ulnaris, - - 171
——— digitorum communis, - 173
——— longus digitorum pedis, - 198
——— oſſis metacarpi pollicis manus, - 176
——— primi internodii pollicis manus, - *ib.*
——— proprius pollicis pedis, - 202
——— ſecundi internodii pollicis manus, - 176
——— triceps cubiti, - - 167
Extremity, ſuperior, bones of the, - 63
————, burſæ mucoſæ of the, 211
————, muſcles of the, - 161
————, ligaments of the, - 242
———, inferior, bones of the, - 82
————, burſæ mucoſæ of the, 214
————, muſcles of the, - 182
————, ligaments of the, - 252
EYE, of the, vol. II. - - 38
—, coats of the, - - - 44
—, humours of the, - - 54
—, veſſels of the, - - - 65
—, nerves of the, vol. II. - 66
—, nerves of the, vol. III. - - 155
—, and its appendages, arteries of the, vol. III. 56
—, ————, veins of the, - 67

Pag.
Eye-ball, muſcles of the, vol. II. - 61
Eye-lids, muſcles of the, vol. I. - 108

F

Face, bones of the, - - 24
——, muſcles of the, - - 110
——, lymphatics of the, vol. III. - 28
——, blood-veſſels of the, - 47.64
Face, nerves of the, - - 164
Facial artery, - - 47
—— nerves, - - - 164
Falx, or ſeptum cerebri, vol. II. - 15
—— minor, or ſeptum cerebelli, - 17
Fat, - - - 11
Femoral, or crural artery, vol. III, - 122
—— vein, - - - 138
——, large, or crural nerve, - 215
Femoris, os, vol. I. - - 82
Feneſtra ovalis, } vol. II. - 83
—— rotunda, }
Fibula, vol. I. - - - - 87
Fibular artery, vol. III. - - 132
—— vein, - - - 138
—— nerve, - - - 119
Fifth pair of nerves, or par trigeminum, - 152
Firſt pair of nerves, or olfactory, - 150
Flexor acceſſorius digitorum pedis, vol. I. - 201
—— biceps cruris, - - 193
—— cubiti, - - 166
—— brevis digitorum pedis, - 200
—— pollicis manus, - 175
—— pedis, - - 202
—— minimi digiti pedis, - 203
—— carpi radialis, - - 169
—— ulnaris, - - ib.
—— digitorum manus { profundus, - 172
{ ſublimis, - 171
—— longus digitorum pedis, - 200

Pag.

Flexor longus pollicis manus, - 175
—————— pedis, - - 202
—— parvus minimi digiti manus, - 179
FOETUS, peculiarities of the, vol. II. - 260
———, poſition of the, in utero, - 267
———, circulation of the blood in the, - 268
Follicles, ſebaceous, - - 10
FOOT, bones of the, vol. I. - - 89
——, muſcles of the. - - 194
——, ligaments of the, - - 259
——, abſorbents of the, vol. III. - 8
——, blood-veſſels of the, - 131
——, nerves of the, - - 222
Formation of bone, vol. I. - - 223
Fornix, vol. II. - - - 26
Foſſa, or rima magna, - - 244
—— navicularis, - - - ib.
—— SYLVII, - - - 21
Fourth pair of nerves, or pathetic, vol. III. 152
Frænum linguæ, vol. II. - - 101
——— labiorum pudendi, - - 244
——— preputii, - - 226
Frontal ſinuſes, { vol. I. - - 10
{ vol. II. - - 71
Frontalis, vol. I. - - 107
Frontis, os, - - - 8

G

Gall-bladder, vol. II. - - 194
Ganglia, vol. III. - - 146
Ganglion ſemilunare magnum, - 206
Gaſtric arteries, - - - 96.97
——— veins, - - 102
——— juice, vol. II. - - 168
Gaſtrocnemius { externus, internus, } vol. I. - 194
Gemellus, - - - ib.
Gemini, - - - - 187

Pag.
GENERATION and URINE, ORGANS of, vol. II. 204.234
——————, blood-veſſels of the, vol. III. - - 105
——————, lymphatics of the, - - - 11
——————, muſcles of the, vol. I. - - - 134.137
——————, nerves of the, vol. III. - - - 209
Genio-hyo-gloſſus, vol. I. - - 121
Genio-hyoideus, - - - *ib.*
Gland, lacrymal, vol. II. - 41
——, parotid, - - - 105
——, pineal, - - 31
——, pituitary, - - 29
——, proſtate, - - - 225
——, ſublingual, - - 106
——, ſubmaxillary, - - 105
Glands, arytenoid, - - - 115
———, axillary, vol. III. - 27
———, bronchial, vol. II. - - 152
———, conglobate, vol. III. - 6
———, iliac, - - - 12
———, inguinal, - - - 9
———, of Cowper, vol. II. - 231
——— of the joints, vol. I. - 230
———, meſenteric, vol. III. - - 15
———, miliary, vol. II. - - 10
———, popliteal, vol. III. - - 9
———, renal, vol. II. - - 210
———, ſalivary, - - - 104
———, ſebaceous, - - 10
———, tracheal, - - 152
Glandulæ ceruminoſæ, - - 79
———— concatenatæ, vol. III. - 29
———— *Meibomianæ*, vol. II. - 40
———— odoriferæ, - - - 229
Glans penis, - - - *ib.*
—— clitoridis, - - - 245

Pag.

Gloſſo-pharyngeus, nervus, vol. III. 166
Glottis, vol. II. 114
———, ligaments of the, *ib.*
———, muſcles of the, vol. I. 127
Gluteal artery, vol. III. 116
——— nerves, 217
maximus, vol. I. 185
Gluteus medius, 186
minimus, *ib.*
Gracilis, 189
Gravid Uterus, of the, vol. II. 248
Great hippocampus, 27
Great ſympathetic nerve, vol. III. 170
Gula, or gullet, vol. II. 156
Gums, 99
Guſtatorius nervus, vol. III. 158
Gutturalis arteria, ſuperior, 46
inferior, 74
Gyri of the cochlea, vol. II. 88

H

interna, vol. III. 101
Hæmorrhoidalis arteria media, 119
externa, 111
——————— vena, 101
Hairs, vol. II. 9
Ham muſcle, or popliteus, vol. I. 193
Hand, bones of the, 73
———, blood-veſſels of the, vol. III. 81.84.86
———, ligaments of the, vol. I. 247
———, lymphatics of the, vol. III. 26
———, muſcles of the, vol. I. 168
———, nerves of the, vol. III. 189
Head, bones of the, vol. I. 6
———, blood-veſſels of the, vol. III. 45
———, ligaments of the, vol. I. 233
———, lymphatics on the, vol. III. 27
———, muſcles on the, vol. I. 107

Pag.
Head, nerves of the, vol. III. - - 150
Heart, of the, vol. II. - 129
Helicis { major, minor, } - - 77
Helix, - - - 75
Hepatic artery, vol. III. - - 95
——— veins, - - - 104
——— nerves, - - - 207
Hippocampus major, vol. II. - 27
——— ——— minor, - - 24
Humeral artery, vol. III. - - 78
——— veins, - - 86
Humeri, os, vol. I. - - 66
Humours of the eye, vol. II. - - 54
Hymen, - - - 247
Hyo-gloſſus, vol. I. - - 122
Hyoides, os, - - - 37
Hyo-thyroideus, - - 119
Hypogaſtric artery, vol. III. - 115
——— vein, - - 139
——— lymphatics, - - 13
——— nerves, - - 209

I

Jaw-bone, lower, vol. I. - - 32
———, ligaments of the, - 232
———, muſcles of the, - 115
——— ——— between the, and os hyoides, - - - 120
Jejunum, vol. II. - - 170
———, lacteals of the, vol. III. - 15
Ileo-lumbalis arteria, - - 115
Iliac arteries and veins, - 108.115.139
Iliacus internus, vol. I. - 143
Ilium, inteſtinum, vol. II. - 170
———, os, vol. I. - - - 50
Impregnation, changes produced in the uterine ſyſtem by, vol. II. - - 251

Incus,

Pag.
Incus, - - - 84
Indicator, vol. I. - - 177
INFERIOR EXTREMITY, aponeuroſis of the, 182
————————, bones of the, - 82
————————, blood-veſſels of the, vol. III. 113
————————, ligaments of the, vol. I. 252
————————, lymphatics of the, vol. III. 8
————————, muſcles of the, vol. I. 182
————————, nerves of the, vol. III. 213
Infra-orbitar artery, - - - 52
Infra-Spinatus, vol. I. - - 161
Infundibulum of the brain, vol. II. - 29
———— of the cochlea, - - 89
———— of the kidneys, - - 208
Inguinal glands, vol. III. - - 9
Innominatum, os, vol. I. - - 50
Integuments, common, of the, vol. II. - 3
Intercoſtal arteries and veins, vol. III. - 90.92
———— nerves, - - 203
Intercoſtales externi, vol. I. - - 145
———— interni, - - 146
Interoſſei manus, - - 179
———— pedis, - - - 204
Interoſſeus-auricularis, - . - 180
Interſpinales et intertranſverſales colli et dorſi, 159
———————— lumborum, 159.160
INTESTINES, vol. II. - - - 169
————, ſmall, - - - . *ib.*
————, great, - - - 171
————, abſorbents of the, vol. III. - 14
Iris, vol. II. - - - - 46
Iſchiatic artery, vol. III. - - - 119
———— nerve, - - - 218
Iſchio-cavernoſus, vol. I. - - 135
Iſchium, os, - - - 52
Iſthmus hepatis, vol. II. - 188
———— faucium, - - 108
———— VIEUSSENII, - - 133
Iter ad tertium ventriculum, - 28

Pag.
Iter ad quartum ventriculum, - 30
Jugular vein, external, vol. III. - 65
————, internal, - - 72

K

Kidneys, vol. II. - - - 204
———, blood-veſſels of the, vol. II. 206.207
vol. III. 105.106
———, lymphatics of the, vol. II. - 207
vol. III. - 20
———, nerves of the, - 209
Knee-joint, ligaments of the, vol. I. - 254
Knee-pan, - - - 88

L

Labia pudendi, vol. II. - - 243
Labial arteries, vol. III. - - 48
Labyrinth of the ear, vol. II. - 87
Lacrymal artery, vol. III. - 56
——— gland, vol. II. - - 41
——— nerve, vol. III. - 154
Lacrymale, or unguis, os, vol. I. - 25
Lacteals, vol. III. - - 14
Lactiferous ducts, vol. II. - - 122
Lamina ſpiralis, - - 89
Larynx, - - - 110
Laryngea, arteria, vol. III. - - 46
Laryngeus, nervus, - - 167
Latiſſimus dorſi, vol. I. - - 149
Laxator tympani, vol. II. - - 86
Leg, vol. I. - - - 85
Levator anguli oris, - - 112
——— ani, - - - 137.138
——— labii inferioris, - - 112
————— ſuperioris alæque naſi, - 111
——— menti, - - - 112
——— oculi, vol. II. - - 62

Pag.
Levator palati, vol. I. - - 124
——— palpebræ ſuperioris, - - 109
——— ſcapulæ, - - 155
Ligamenta { lata / rotunda } uteri, vol. II. - 237
Ligaments, of the, vol. I. - - 228
——— of the lower jaw, - 232
——— connecting the head with the firſt and ſecond vertebra of the neck, and theſe vertebræ to each other, - - 233
——— of the other vertebræ, - 234
——— of the ribs, - 235
——— of the bones of the pelvis, - 238
——— of the ſuperior extremity, - 242
——— of the clavicle, - ib.
——— proper to the ſcapula, - 243
——— of the joint of the ſhoulder, - 244
——— of the joint of the elbow, - 245
——— between the bodies, and under ends of the radius and ulna, - - 246
——— between the fore arm and wriſt, 247
——— of the carpus, - 248
——— between the carpal and metacarpal bones, 249
——— between the extremities of the metacarpal bones, - - - ib.
——— at the baſe of the metacarpal bone of the thumb, and of the firſt joint of the fingers, ib.
——— of the firſt and ſecond joints of the thumb, and ſecond and third of the fingers, 250
——— retaining the tendons of the muſcles of the hand and fingers *in ſitu*, - ib.
——— of the inferior extremity, - 252
——— connecting the os femoris with the os innominatum, - - ib.
——— of the joint of the knee, - 254
——— connecting the fibula to the tibia, 257
——— connecting the bones of the tarſus with thoſe of the Leg, - - 258
——— of the tarſus, - - 259

Pag.
Ligaments between the bones of the tarſus and thoſe of the metatarſus, - - 260
———— connecting the metatarſal bones to each other, - - 261
———— of the phalanges of the toes, - ib.
———— and ſheaths retaining the tendons of the muſcles of the foot *in ſitu*, - - ib.
———— of the liver, vol. II. - 189
Ligamentum ſuſpenſorium penis, - 227
Lingualis, vol. I. - - - 122
Lingual artery, vol. III. - - 46
——— vein, - - 65
——— nerve, - - - - 168
Lips, vol. II. - - - 98
Liquor amnii, - - - 259
——— pericardii, - - 128
LIVER, - - - 186
———, blood-veſſels of the, vol. III. - 95.103
———, lymphatics of the, - 18
———, nerves of the, - - 207
Lobes of the brain, vol. II. - - 21
——— of the liver, - - 187
——— of the lungs, - - 147
Locus niger crurum cerebri, - - 34
Longus colli, vol. I. - - 147
Longiſſimus dorſi, - - 153
Lumbar arteries, vol. III. - - 113
——— glands, - - 13
——— plexus of nerves, - - 213
——— vertebræ, vol. I. - - 45
Lumbricales manus, - - 172
———— pedis, - 201
Lunare, os, - - - 74
LUNGS, vol. II. - - 146
———, blood-veſſels of the, vol. II. - 153
———, blood-veſſels of the, vol. III. - 89.92
———, lymphatics of the, - 22
———, nerves of the, - - 198

Pag.
Lymphatics, - - 8
Lyra fornicis, vol. II. 27

M

Magna pollicis arteria, vol. III. - 81
Magnum, or capitatum, os, vol. I. - 76
Malæ, os, - - - 25
Malleolus { externus, - - 88
Malleolus { internus, - - 87
Malleus, vol. II. - - 84
Mammæ, - - - 119
Mammary arteries, vol. III. - 88
——— veins, - - 93
——— nerves, vol. II. - - 122
Marrow, vol. I. - - 221
Marſupialis, - - - 188
Maſſa carnea *Jacobi Sylvii*, - 201
Maſſeter, - - - 116
Maſſeteric arteries, vol. III. - - 51.53
Mater, { dura, vol. II. - - 14
Mater, { pia, - - - 20
Matrix, - - - 235
Maxilla inferior, vol. I. - - 32
Maxillare ſuperius, os, - - 26
Maxillary artery, external, vol. III. - 47
———, internal, - - 50
——— vein, - - 65
——— nerves, - - 153
Meatus auditorius externus, vol. II. - - 78
——— internus, - 91
Median vein, vol. III. - - 86
——— nerve, - - - 190
Mediastinum, vol. II. - - 126
Medulla oblongata, - - 35
——— ſpinalis, vol. III. - - 174
Medullary ſubſtance of the brain, vol. II. - 22
Meibomian glands, - - - 40

Pag.
MEMBRANA CELLULARIS, - - 10
——— medullaris, vol. I. - 221
——— pupillaris, vol. II. - 46.261
——— Schneideriana, - - 71
——— tympani, - - 80
——————— ſecundarii, - 93
Meningeal artery, vol. III. - 51
Meſenteric blood-veſſels, - 98
——— glands, - - 15
——— nerves, - - 208
MESENTERY, vol. II. - - 175
Meſo-colon, - - - *ib.*
Meſo-rectum, - - 176
Metacarpal bones, vol. I. - - 77
———, peculiarities of the, - 78
Metacarpeus, - - - 178
Metatarſal bones, - - - 94
———, peculiarities of the, - 95
——— artery, vol. III. - - 131
Miliary glands, vol. II. - - 10
Modiolus, - - - 89
Motion of bones, different kinds of, vol. I. - 227
Motores oculorum, or third pair of nerves, vol. III. 151
MOUTH, of the, vol. II. - - 98
———, muſcles of the, vol. I. - - 110
Multifidus ſpinæ, - - 155
MUSCLES in general, of the, - - 105
Muſculo-cutaneous nerve of the ſuperior extremity, vol. III. - - - 187
Mylo-hyoideus, vol. I. - - 121

N

NAILS, vol. II. - - 8
Naris compreſſor, vol. I. - - 110
Naſalis labii ſuperioris, - - 115
Naſi alæ depreſſor, - - - 111
——— levator, - - - *ib.*
———, os, - - - - 24

Pag.
Nates cerebri, vol. II. - - 30
Naviculare, os, vol. I. - - - 92
NECK, blood-veſſels of the, vol. III. - 45.73
——, lymphatics of the, - - 29
——, muſcles on the fore and lateral part of the, vol. I. - - 117.147
——, nerves of the, vol. III. - - 181
——, vertebræ of the, vol. I. - 41
NERVES, of the, vol. III. - - 143
————, cerebral, - - - 150
————, ſpinal, - - 174
Ninth pair of nerves, - - 168
Nipple, vol. II. - - 120
Noni deſcendens, nervus, vol. III. - 169
NOSE, of the, vol. II. - - 68
——, bones of the, vol. I. - 24
vol. II. - - 68
——, blood-veſſels of the, vol. II. - 74
——, lymphatics of the, vol. III. - - 28
——, muſcles of the, vol. I. - - 110
——, nerves of the, vol. II. - 74
Nymphæ, vol. II. - - 245

O

Obliquus aſcendens internus, vol. I. - 131
———— capitis inferior, - - 157
ſuperior, - 158
———— deſcendens abdominis, - 130
———— oculi inferior, ſuperior, vol. II. - 64
Obturator artery, vol. III. - 118
———— externus muſcle, vol. I. - 185
———— internus muſcle, - - 188
———— nerve, vol. III. - - 214
Occipital artery, - - - 50
———— vein, - - 65
———— nerve, - - - 183
Occipitis, os, vol. I. - - 12
Occipito-frontalis, - - - 107

Pag.
Œſophageal arteries and veins, vol. III. - 90.92
——— nerves, - - 199
ŒSOPHAGUS, vol. II. - - - 156
Œthmoidalis arteria { anterior, posterior, } vol. III. - 58
Œthmoides, os, vol. I. - - 18
Olfactory, or firſt pair of nerves, vol. III. - 150
OMENTUM, vol. II. - - 177
——— minus, - - 178
Omo-hyoideus, vol. I. - - 120
Ophthalmic artery, vol. III. - 56
——— vein, - - 06
——— nerves, - - 155
Opponens pollicis, vol. I. - - 175
Optici, or ſecond pair of nerves, { vol. II. - 52
vol. III. 151 }
Orbiculare, os, vol. II. - - 85
Orbicularis oculi, vol. I. - 108
——— oris, - - 114
——— palpebrarum, - - 108
Orbits, vol. II. - - - 38
Organs of the ſenſes, - - 3
——— of urine and generation, in the male, 204
———, in the female, 234
———, lymphatics of the, vol. III. - - 11
———, blood-veſſels of the, 105
———, nerves of the, 209
Oris anguli, { depreſſor, vol. I. - 113
levator, - - 112 }
Os tincæ, vol. II. - - 236
Ova, - - - - 238
Ovaria, - - - *ib.*

P

Palate, vol. II. - - 100
———, arches of the, - - 108

INDEX.

Pag.
Palati { circumflexus, vol. I. 123
levator, 124
——, os, 29
Palatina inferior arteria, vol. III. 47
Palato-maxillary nerve, 157
Palato-pharyngeus, vol. I. 125
Palmaris arteria profunda, vol III. 81
——— arcus arterioſus profundus, *ib.*
——————— ſuperficialis, 84
——— nervus, 191.193
——— muſculus { longus, vol. I. 168
brevis, 169
Palpebræ, vol. II. 39
Palpebræ ſuperioris levator, vol. I. 109
Palpebrarum orbicularis, 108
PANCREAS, vol. II. 201
Panniculus carnoſus, 13
Pap of the throat, 100
Papilla, or nipple, 120
Papillæ of the tongue, 102
Par trigeminum, or fifth pair of nerves, vol. III. 152
Parietalia oſſa, vol. I. 11
Parotid { duct, gland, } vol. II. 105
Pars vaga of the eighth pair of nerves, vol. III. 166.197.205
Patella, vol. I. 88
Pathetic, or fourth pair of nerves, vol. III. 152
Patientiæ muſculus, vol. I. 155
Pectinalis, 183
Pectoralis { major, 143
minor, 144
Pedes hippocampi, vol. II. 27
Pedis, interoſſei, vol. I. 204
Pedunculi { cerebri, cerebelli, } vol. II. 34.35
PELVIS, blood-veſſels of the, vol. III. 113
———, bones of the, vol. I. 50
———, ligaments of the bones of the, 238
———, lymphatics of the, vol. III. 13
———, muſcles of the, vol. I. 182

Pag.

PELVIS, nerves of the, vol. III. 212
PENIS, vol. II. 226
——, blood-veſſels of the, vol. II. 231
vol. III. 111
——, muſcles of the, vol. I. 135
——, ligamentum ſuſpenſorium of the, vol. II. 227
——, lymphatics of the, vol. II. 233
vol. III. 11
——, nerves of the, vol. II. 235
vol. III. 211
Perforans, vol. I. 172
Perforatus, 171
PERICARDIUM, vol. II. 128
Perinei tranſverſus, vol. I. 136.138
Perineum, vol. II. 244
Perioſteum externum, vol. I. 220
—— internum, 221
Peritonœum, vol. II. 161
Peroneal artery, vol. III. 132
—— nerve, 219
Peroneus brevis, vol. I. 197
—— longus,
—— tertius, 198
Pharyngeal artery, vol. III. 49
—— nerve, 167
PHARYNX, vol. II. 109
——, muſcles on the back-part of the, vol. I. 126
Phrenic arteries and veins, vol. III. 93
—— nerve, 196
Pia mater, vol. II. 20
Pigmentum nigrum, 49
Pineal gland, 31
Pinguedo, 11
Piſiforme, os, vol. I. 75
Placenta, vol. II. 256
Plantar artery and arch, vol. III. 134.135
Plantaris, vol. I. 195
Platyſma myoides, 117
PLEURA, vol. II. 125

Pag.
Pomum Adami, - - - 111
Pons { TARINI, - - - 34
  VAROLII, - - - 35
Popliteal artery, vol. III. - - 127
—— glands, - - 9
—— vein, - - - 138
Popliteus, vol. I. - - - 193
Portæ, vena, vol. III. - - 103
Portio mollis of the ſeventh pair of nerves, vol. II. 95
—— dura of the ſeventh pair of nerves, vol. III. 160
Poſterior, or adductor { indicis, medii digiti, tertii digiti } pedis, vol. I. 206
—— annularis, - - - 181
—— auris, - - - 110
—— { indicis } manus, - - 180
  { medii digiti } manus, - 181
Prepuce of the penis, vol. II. - - 226
—— of the clitoris, - - 245
Prior { annularis, indicis } manus, vol. I. - 180
—— medii digiti manus, - - 181
——, { or abductor medii digiti, —— tertii digiti, —— minimi digiti } pedis, 205
——, or abductor indicis pedis, - - 206
Profunda femoris arteria, vol. III. - 123
—— vena, - - 138
—— penis arteria, - - 112
Pronator radii { quadratus, teres, } vol. I. - 174
Proſtate gland, vol. II. - - 225
Pſalterium fornicis, - - 27
Pſoas { magnus, parvus, } vol. I. - - 142
Pterygoideæ arteriæ, vol. III. - - 51
Pterygoideus { externus, vol. I. - 117
  internus, - - 116
Pubis, os, - - - - 53

Pag.

Pudendum, vol. II. - - 243
Pudic artery, vol. III. - - 110
—— vein, - - 113
—— nerves, - - 211
Pulmonary artery and veins, - - 42
Puncta lacrymalia, vol. II. - - 42
Pupil of the eye, - - 46
Pylorus, - - - 165
Pyramidalis, vol. I. - - - 134
Pyriformis, - - - - 187

Q

Quadratus femoris, - - 188
——— genæ, - - 112
——— lumborum, - - - 141

R

Radial artery, vol. III. - - 80
——— nerve, - - 190
Radialis externus { brevior, longior, } vol. I. - 170
——— internus, - - 169
Radius, - - - 71
Ranina, arteria, vol. III. - - 47
———, vena, - - - 65
Receptaculum chyli, { vol. II. - - 158
vol. III. - 21 }
Rectum, vol. II. - - - 173
———, lymphatics of the, - 14
Rectus abdominis, vol. I. - - 133
——— capitis anterior { major, minor, } - - 148
——————— lateralis, - - *ib.*
——————— posticus major, - - 157
———————————— minor, - - *ib.*
——— femoris, - - 190
Recurrent nerve of the eighth pair, vol. III. 197

Pag.
Recurrent radial artery, - - 80
——— ulnar artery, - - - 82
Renal artery and vein, - - 105.106
—— glands, vol. II. - - 210
—— nerves, vol. III. - - 209
Retina, vol. II. - - - 52
Retractor anguli oris, vol. I. - - 114
Retrahentes auris, - - 110
Rhomboideus, - - - 151
Ribs, - - - - 56
Rotula, - - - - 88

S

Sacral artery, vol. III. - - 114
—— lateral arteries, - - 116
—— nerves, - - - 216
Sacro-lumbalis, vol. I. - - - 152
Sacrum, os, - - - 46
Salivary glands, vol. II. - - 104
Salpingo-pharyngeus, vol. I. - 125
Saphænæ, venæ, vol. III. - - 136
Saphænus, nervus, - - - 216
Sartorius, vol. I. - - 189
Scala { tympani, vestibuli, } vol. II. - - 9[illegible]
Scalenus anticus, ——— medius, ——— posticus, } vol. I. - - 158
Scaphoides, os, - - - 73
Scapula, - - - - 64
Scapulæ levator, - - 155
Scapular arteries, vol. III. - - 75.77
——— nerve, - - 186
Sciatic artery, - - 119
——— nerve, - - - 218
Sclerotic coat, vol. II. - - 47
Scrotum, - - - 216
Sebaceous ducts, - - - 10

Sebaceous

Pag.

Sebaceous follicles, - - - 10

———— glands, - - - - *ib.*

Second pair of nerves, or optic, vol. III. - 151

Secundines, vol. II. - - 254

Semicircular canals of the ear, - - 90

Semilunar ganglion, vol. III. - - 206

Semimembranoſus, vol. I. - 192

Seminal veſſels, vol. II. - - 219.222

Seminis ejaculator, vol. I. - - 135

Semiſpinalis colli, - - 156

———— dorſi, - - - 155

Semitendinoſus, - - - 192

Senses, Organs of the, vol. II. - 3

Septum cerebri, or falx, - - 15

———— cerebelli, - - 17

———— lucidum, - - 26

———— penis, - - - 228

———— ſcroti, - - - 217

Serratus magnus, vol. I. - 144

———— minor anticus, - - *ib.*

———— poſticus inferior, - - 150

———— ———— ſuperior, - - 152

Seſamoidea, oſſa, - - - 97

Seventh pair of nerves, vol. III. - 160

Shoulder-blade, vol. I. - - 64

Sinus venoſus of the heart, vol. II. - 132.139

—— venoſi of the ſpinal marrow, vol. III. 180

Sinuſes of the dura mater, vol. II. - 18

Sinuſes of the dura mater, vol. III. - 70

Sixth pair of nerves, or abducentes, - 159

Skarf-ſkin, vol. II. - - - 3

Skeleton, different kinds, and diviſion of a, vol. I. 5

————, principal differences between the male and female, - - 99

Skin, vol. II. - - - 6

Skull, vol. I. - - - 5

Soleus, - - - 194

Spermatic artery and vein, vol. III. - 107.108

———— cord, vol. II. - - 220

Pag.
Spermatic nerves, vol. III. - 210.214
Sphenoid ſinuſes, { vol. I. - - 23
{ vol. II. - - 72
Sphenoidal cornu, vol. I. - 31
Sphenoides, os, - - 20
Sphincter ani, - - 136.138
———— labiorum, - - 114
———— vaginæ, - - - 138
———— veſicæ, vol. II. - - 214
SPINAL MARROW, of the, vol. III. - 174
——— nerves, origin of the, - - 176
Spinalis dorſi, vol. I. - - 153
SPINE, - - - - 39
Spiral nerve, vol. III. - - 188
Splanchnicus, nervus, - - 206
SPLEEN, vol. II. - - - 197
————, lymphatics of the, vol. III. - 20
Splenic artery, - - - 97
——— vein, - - - 102
——— nerves, - - 208
Splenius, vol. I. - - - 151
Spongioſum, os, - - - 31
————— corpus urethræ, vol. II. - 228
Stapedius, - - - 87
Stapes, - - - 85
Sterno-cleido-maſtoideus, vol. I. - - 118
Sterno-coſtalis, - - - 147
Sterno-hyoideus, - - - 118
Sterno-thyroideus, - - 119
Sternum, - - - 60
STOMACH, vol. II. - - - 163
—————, abſorbents of the, vol. III. - 17
—————, blood-veſſels of the, vol. II. - 168
—————, nerves of the, vol. III. 168.206.207
Stylo-gloſſus, vol. I. - - 122
Stylo-hyoideus, - - - 123
Stylo-pharyngeus, - - ib.
Subclavian artery, vol. III. - - 73
Subclavius, vol. I. - - 144

Pag.

Sublingual gland, vol. II. - - 106
——— artery, vol. III. - - 47
Submaxillary gland, vol. II. - - 105
Submental artery, vol. III. - - 47
Suboccipital nerves, - - 181
Subſcapularis, vol. I. - - 164
Supercilia, vol. II. - - - 39
Supercilii corrugator, vol. I. - - 108
Superior cava, vol. III. - - 44
SUPERIOR EXTREMITY, aponeuroſis of the, vol. I. 165
———, blood-veſſels of the, vol. III. 73
———, bones of the, vol. I. 63
———, ligaments of the, 242
———, lymphatics of the, vol. III. 25
———, muſcles of the, vol. I. 161
———, nerves of the, vol. III. 181
Supinator radii { brevis, } vol. I. - 174
Supinator radii { longus, } vol. I. - - 173
Supra-orbitar artery, vol. III. - - 58
Supra-ſpinatus, vol. I. - - 161
Sympathetic nerve, vol. III. - 170. *et ſeq.*
Synovial organs, vol. I. - - 230

T

Tænia hippocampi, vol. II. - - 27
——— ſemicircularis of HALLER, - 25
Tarſea, arteria, vol. III. - - 131
Tarſus, bones of the, vol. I. - - 89
——— of the eye-lids, vol. II. - - 40
TEETH, vol. I. - - - 35
Tela choroidea, vol. II. - - 27
Temporal artery, vol. III. - 52
——— vein, - - - 64
Temporalis, vol. I. - - 115
Temporum, oſſa, - - 15
Tenſor tympani, vol. II. - - 86
——— vaginæ femoris, vol. I. - 189
——— palati, - - 123

Pag.
Tentorium cerebelli, vol. II. - 16
Teres { major, minor, } vol. I. - - 162
TESTES, vol. II. - - - 216
———, blood-veſſels of the, vol. III. - 107
———, lymphatics of the, - 11
———, nerves of the, - 210.214
——— cerebri, vol. II. - 30
Thalami nervorum opticorum, - 25
Thigh-bone, vol. I. - - 82
Third pair of nerves, or motores oculorum, vol. III. 151
THORACIC DUCT, { vol. II. - 157
vol. III. - - 21 }
THORAX, of the, vol. II. - 118
———, blood-veſſels within the, vol. III. - 88
———, bones of the, vol. I. - 56
———, muſcles ſituated upon the anterior part of the, - - 143
———, nerves within the, vol. III. - 196
THROAT, of the, vol. II. - - 108
Thyro-arytenoideus, vol. I. - 128
Thyro-epiglottideus, - - 129
Thyro-hyoideus, - - 119
Thyroid cartilage, vol. II. - - 111
——— gland, - - 151
Thyroidea, arteria, ſuperior, vol. III. - 46
——————, inferior, - 74
Tibia, vol. I. - - 85
Tibial arteries, vol. III. - - 130
—— veins, - - 138
—— nerve, - - 221
Tibialis anticus, vol. I. - 195
——— poſticus, - - 196
Tomentum cerebri, vol. II. - 21
TONGUE, of the, - - 101
———, artery of the, vol. III. - 46
———, lymphatics of the, - 28
———, muſcles of the, vol. I. - 121.122
———, nerves of the, vol. II. - 104

Tonſils,

Pag.
Tonſils, - - - 108
Torcular Herophili, { vol. II. - - 18
{ vol. III. - 70
Trachea, vol. II. - - 149
Trachelo-maſtoideus, vol. I. - - 154
Tractus optici, vol. II. - - 25
Tragicus, - - - - 77
Tragus, - - - 76
Tranſverſalis abdominis, vol. I. - - 132
——— colli, - - 156
——— pedis, - - 204
——— urethræ, - - 136
Tranſverſo-ſpinalis { colli, - - 156
{ dorſi, - - 155
Tranſverſus auris, vol. II. - - 78
——— perinei, vol. I. - 136.138
Trapezium, os, - - - 75
Trapezius, - - - 149
Trapezoides, os, - - 75
Triangulare, os, - - - 31
Triangularis oris, - - 113
——— ſterni, - - 147
Triceps adductor femoris, - - 184
——— extenſor cubiti, - 167
Tricuſpid valve, vol. II. - - 136
Trochlearis, - - - 64
Trumpeter muſcle, vol. I. - 114
Trunk, bones of the, - - 39
———, muſcles ſituated on the poſterior part of the, 149
Tuber annulare, vol. II. - - 35
Tubercula quadrigemina, - - 30
Tuberculum Loweri, - - 133
Tube, *Euſtachian*, - - 82
———, *Fallopian*, - - 239
Tunica adnata, - - - 44
——— albuginea, - - 48
——— arachnoidea, - - 19
——— aranea, or vitrea, - - 59
——— choroides, - - 48

Pag.
Tunica ſclerotica, - - 47
——– vaginalis, - - 217
Turbinatum inferius, os, vol. I. - 31
Tympani chorda, vol. II. - - 95
———– laxator, - - 86
———– membrana, - - 80
Tympanum, - - 81

V

Vagina, vol. II. - - 240
Vaginæ ſphincter, vol. I. - 138
Vaginal artery, vol. III. - - 110
Valves of the abſorbents, - - 5
——— of the veins, - - 41
——— of the heart and arteries, vol. II.—See Heart.
Valvula coli, - - - 183
——— ſemicircularis oculi, - 43
Vaſa brevia, vol. III. - - 97
—— efferentia teſtis, vol. II. - - 222
—— efferentia / inferentia of the abſorbents, vol. III. 8
—— lactea primi et ſecundi generis, - 16
—— va[illegible], - - - 35
Vaſtus externus, / internus, vol. I. - - 191
Veins, of the, vol. III. - - 39
Velum *Vieuſſenii*, vol. II. - - 33
Vena Cava, general courſe of the, / ———, ſuperior, / ———, inferior, vol. III. 44
Vena magna ipſius penis, vol. II. - 232
Vena magna ipſius penis, vol. III. - 113
—— portæ, - - - 103
Ventricles of the brain, vol. II. - - 23
———— of the heart, - - 135.140
———— of the larynx, - - 115
Vermiform appendix of the cæcum, - 172
———— appendages of the cerebellum, - 32

Vertebræ,

Pag.
Vertebræ, true, vol. I. 39
——, falſe, 46
Veſica urinaria, vol. II. 212
Veſicalis ima, arteria, vol. III. 118
Veſicula fellis, vol. II. 194
Veſiculæ ſeminales, 223
Veſtible of the labyrinth, 87
—— of the pudendum, 246
VISCERA, of the, 3
Vitreous humour, 58
Ulna, vol. I. 69
Ulnar artery, vol. III. 82
—— nerve, 192
Ulnaris { externus, vol. I. 171
{ internus, 169
Umbilical cord, vol. II. 254
—— artery, vol. III. 118
Unciforme, os, vol. I. 76
Unguis, os, 25
Voice, vol. II. 116
Volar arches, vol. III. 81.83
Vomer, vol. I. 32
Vorticoſe veins, vol. III. 67
Ureters, vol. II. 209
Urethra, 229.234
Urethræ tranſverſalis, vol. I. 136
Urinæ accelerator, 135
UTERUS, of the, vol. 235
——, appendages 237
——, gravid, of , 248
Uvula, 100
Uvulæ azygos, vol. I. 125

Z

Zonula ciliaris, vol. II. 60
Zygomaticus major, vol. I. 113
—— minor, *ib.*

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